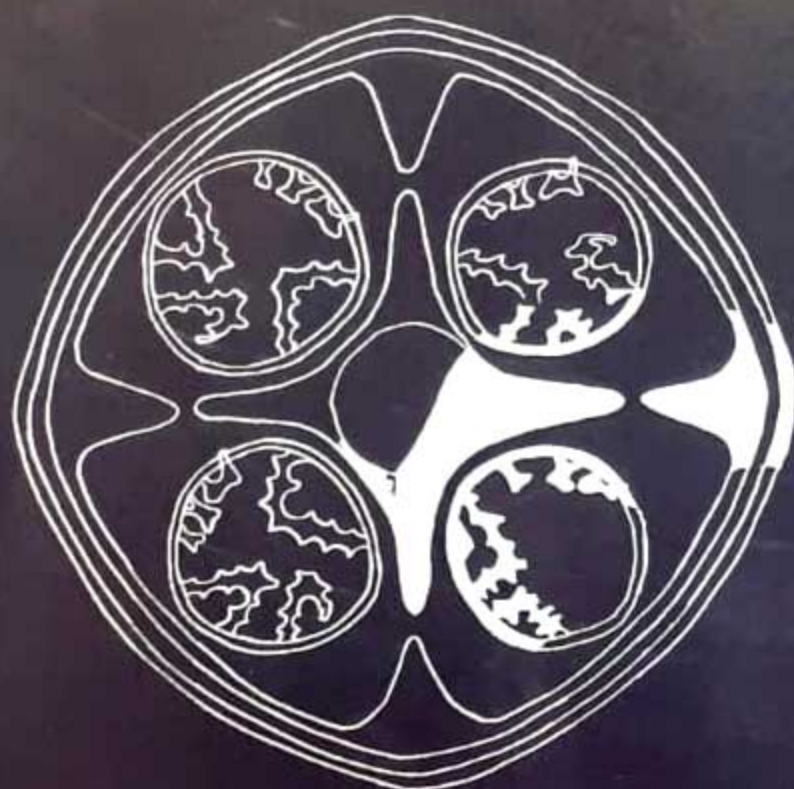


A HISTORY LESSON POTTERY MANUFACTURING 8000 YEARS AGO





South-Eastern European Pottery:
Archaeology and Scientific Techniques
Cultural project



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“1 Decembrie 1918” University, Alba Iulia

A HISTORY LESSON -
POTTERY MANUFACTURING
8000 YEARS AGO

- exhibition catalogue -

Alba Iulia, 2007

Publisher	Aeternitas, Alba Iulia
Text authors	Beatrice Ciută Cristian Florescu Mihai Gligor Paula Mazăre Călin Șuteu Simona Varvara
Copy editors	Marius Breazu Călin Șuteu
Illustrations	Marius Breazu Ștefan Lipot Paula Mazăre Călin Șuteu
Photography	Călin Șuteu
Restauration - conservation	Dan Anghel Ștefan Lipot Csaba Toth
English translation	Gabriela Bințișan
Funded by	European Union  Education and Culture Culture 2000

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foreword

I have the pleasure to introduce the catalogue of the exhibition entitled “A History Lesson – Pottery Manufacturing 8000 Years Ago”, which is part of the “South-Eastern European Pottery: Archaeology and Scientific Techniques” cultural project financed by the European Union under the Culture 2000 programme. Our university is honoured to represent Romania, as co-organizers, in this project, together with other prestigious research institutes from Italy (Institute of Science and Technology for Ceramics, Faenza) and Slovenia (University of Primorska, Institute for Mediterranean Heritage, Piran).

The cultural heritage is a bridge between the past and the future. The fact that our country has joined the European family proved once more that the common cultural area originating in ancient civilizations was one of the arguments involved in that process. This project complies with the strategic principles and aims of the Culture 2000 programme, namely to “promote cultural dialogue and mutual knowledge of the culture and history of European peoples”.

The catalogue and the exhibition itself represented a challenge for the team of young specialists involved in this project. The efforts and endeavours of my colleagues have concentrated especially on combining the rigorous scientific research with the characteristic methods of archaeology, in an attempt to present evidence of the Neolithic material cultures, illustrated by pottery artefacts, to the general public as well. In our opinion, the outcome was a stylish catalogue which, apart from the archaeological artefacts (vessels and plastic art), also provides concise information on the main Neolithic and Eneolithic cultures in Transylvania, as well as useful data regarding archaeometric techniques, pottery conservation and restoration, etc.

This project addresses not only the specialists in the field, but also school communities, and those who are passionately fond of archaeology and attracted by the beauty and elegance of the Neolithic pottery. The title of the exhibition speaks for the objectives envisaged by its organizers. The large area dedicated to this exhibition is also loaded with history and therefore we believe that it might transpose the visitors into “the age of the exhibits”. We would like to invite you to visit the town of Alba Iulia, our university, and of course the exhibition, which will remain open to the public until the beginning of October.

As a co-organizer and co-financing institution in this project, “1 Decembrie 1918” University of Alba Iulia complies with its mission and objectives, namely to recover and restore historical and cultural traditions, to continuously develop scientific research, and to welcome cooperation with national and foreign educational and research institutions.

Rector,
Moise Ioan Achim, PhD Professor

instead of introduction

“A History Lesson – Pottery Manufacturing 8000 Years Ago” is the title of the catalogue and exhibition produced by the “1 Decembrie 1918” University of Alba Iulia under the Culture 2000 programme financed by the European Union. This activity is part of the “South-Eastern European Pottery: Archaeology and Scientific Techniques (SEE PAST)” project, whose fundamental goal is to promote the cultural heritage – in this case one of the oldest human artefacts, namely pottery – to the large public, and especially to young people (pupils, students, etc.).

This project, by presenting ancient values, aims to raise young people's awareness regarding their affiliation to a common cultural area.

First of all, we would like to mention that the authors of the catalogue texts have no intention to “solve” the complex and complicated issues related to the Romanian Neolithic and Eneolithic in general, and particularly to those periods in the Transylvanian area. The title chosen for the exhibition and the catalogue speaks for itself and does not require any other explanations.

Therefore, this catalogue has been conceived by the authors taking into account both the specific goals of the project and the target public.

The catalogue begins with a brief presentation of the sites where the archaeological artefacts were discovered, while the most substantial part describes the artefacts displayed in the exhibition.

Seven archaeological cultures have been chosen to illustrate the Neolithic pottery, especially since our university has contributed to their deciphering by preventive or systematic research. The scientific dissemination of the results, including the present catalogue, increases the information available on this subject and links the present Romanian territory, and particularly the Transylvanian area, to the South-Eastern Neolithic civilisation.

The catalogue cards present in a few words Neolithic and Eneolithic cultures and cultural groups in accordance with the present state of research, and without forcing any interpretations or dates that have not been generally accepted by the specialists. Where information regarding new archaeological discoveries has been presented, we have detailed it. The readers may notice that some of the artefacts are unpublished, which, in our opinion, increases the value of this catalogue.

Most pottery artefacts displayed in this exhibition come from the scientific and didactic archaeological collection of the “1 Decembrie 1918” University of Alba Iulia. Besides these, there are also vessels from the National Union Museum – Alba Iulia, and from the “Ioan Raica” Municipal Museum – Sebeș.

For the chronological framing of the archaeological cultures, and implicitly of their relevant artefacts, we

have decided to choose absolute chronology (calibrated C14 dates), and consequently these may differ from the relative chronology dating.

If the first part of this catalogue could be a very useful tool even for researchers and archaeology students, the second part is addressed especially to non-specialized readers, and particularly to school pupils, since it is a brief and easy-to-understand “history lesson”. With this aim in view, we have written a separate chapter comprising general notions related to the appearance of pottery, Neolithic, chronology issues, archaeological culture, pottery manufacturing techniques in Neolithic, etc.

Moreover, a series of aspects regarding the stages of prehistoric pottery analyses, including the modern methods provided by exact sciences (physics, chemistry, geology, etc.), are presented to the large public in a simplified and accessible manner. Since we have tried to emphasize the interdisciplinary character of archaeology and the potential of archaeometric techniques in the study of ancient pottery, some of the archaeometric methods used in the investigation and dating of pottery artefacts, as well as the important information they provide for archaeological research, are also presented in a few words.

The ample references at the end of the catalogue allow specialists to verify the information presented here, and readers interested in archaeology to find complete and complex documentation regarding the issues under discussion.

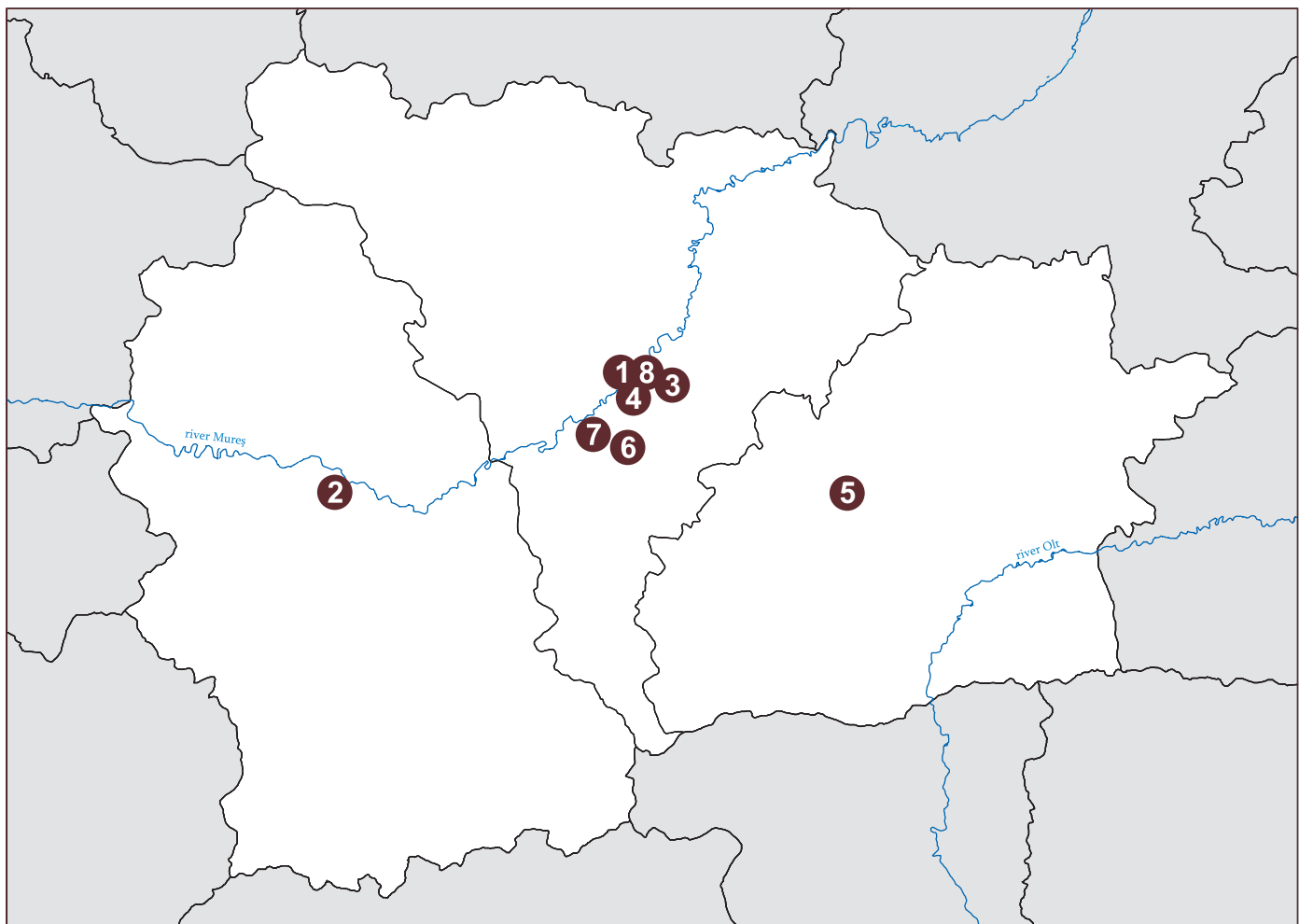
We would also like to mention that this catalogue has

been published in Romanian as well, under the title “Ceramica neolitică – o lecție de istorie”.

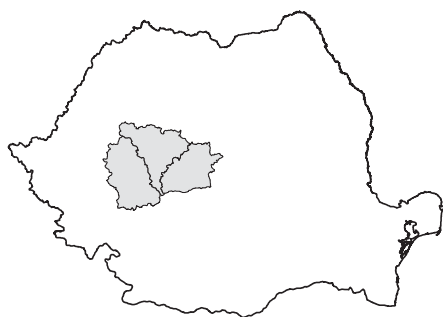
Furthermore, some of the Neolithic artefacts displayed in this exhibition, together with pottery vessels from the partner institutes in Slovenia and Italy, will be included in the virtual exhibition entitled “Pottery: a glance at the life of prehistoric people”, which will be available online at <http://www.seepast.net> (the project website).

The Authors

description of archaeological sites



0 15 30 45 60 75 Km



- | | |
|--------------|-----------------|
| 1 Alba Iulia | 5 Ocna Sibiului |
| 2 Deva | 6 Sebeș |
| 3 Ghirbom | 7 Sibișeni |
| 4 Limba | 8 Șeușa |



The essential geographic features of Romania are given by its location in the Carpathian-Danubian-Pontic area. The Romanian Carpathians are like the walls of a fortress that comprises a large area known as the Transylvanian Depression. Due to its central position in the country, the Transylvanian Depression is a region where a series of geographical elements converge. The Middle Mureş has a large plain, a system of terraces, and a hydrographic basin with many tributary streams, thus being very important for the economy of this region. The surface natural resources were one of the main reasons for which human communities of different historic periods built settlements in that area. If we add the subsoil resources (the rock salt from Ocna Mureşului and Ocna Sibiului, the copper from Deva, the lead and zinc ore from Săcărâmb, the travertine from Banpotoc, the clay found in significant quantities at Ciugud, Drâmbar, Obreja, Gârbova), we may presume which were the habitat opportunities for the Neolithic communities. Archaeological research showed that even from ancient times the Mureş River has been a “boulevard” used by human communities in both directions (towards and from inside the Carpathian Arch). Archaeologists have discovered that the Middle Mureş Basin and the Târnave Basin were densely populated regions. We will present some of the Neolithic and Eneolithic settlements from this geographic area, and for which the field research has revealed artefacts characteristic of the archaeological cultures identified here.(M.G.)

1. Alba Iulia – “Lumea Nouă”

(Alba Iulia, Alba County)

Lumea Nouă Neolithic and Eneolithic settlement is located in the northeastern part of Alba Iulia town, on the second terrace of the Mureş River. The site covers a surface of approximately 40 ha. The western boundary is close to the Alba Iulia – Zlatna road where there are forested hills; the northern boundary is close to Miceşti (a suburban locality); the eastern limit is actually the edge of the terrace, above the University complex; the southern margin is defined by the dry riverbed of a former watercourse, but the area is now flat because of the intensive agriculture. From a geomorphological point of view, the site is located on the upper terrace from the right bank of the Mureş River. The terrace is 1.5-2 km wide and it stretches to the west up to the contact area with the adjacent hills. We should mention that at present, the Mureş River flows at approximately 1.5-2 km east of the settlement. The Mureş riverbed was probably much closer in those times (prehistory), and Ampoi (or one of its branches) was flowing nearby. The centre of the settlement was probably near the farm of the Roman-Catholic Archbishopric (the former summer restaurant). The archaeological research carried out at Lumea Nouă consisted of systematic excavations between 1944-1947 and 1961-1963 (D. and I. Berciu), in 1976 (I. Paul), between 1995-1996 (I. Al. Aldea and M. Ciută), as well as of rescue excavations between 2002-2006 (I. Paul and M. Gligor). The stratigraphic sequence of the Alba Iulia – Lumea Nouă Neolithic site is the following: Vinča B – Lumea Nouă – Foeni – Petreşti – Coţofeni. Vinča C pottery was found only sporadically. For the Iron Age, there is an interesting Basarabi

discovery. The settlement was also inhabited during La Tène (recent Dacian discoveries) and Roman Period (villa rustica). The study of Lumea Nouă painted pottery has led to the conclusion that these artefacts are associated with incised Vinča pottery, including those found in closed complexes. Latest research has shown the existence of several trenches (which, however, were revealed only on certain areas). Taking into consideration their direction, shape and size, they seem to be part of a defence system dating back to the Foeni and Petrești habitation. The multiple burials (2003, 2005) are considered to be special discoveries and so far they are unique for the Romanian Neolithic. Recent excavations have revealed a long-term habitation site belonging to the Foeni group. Many vessels come from a certain stratigraphic context, namely B1/S. II (2005), which is a closed complex (pit house) dated to the period of the Foeni group. A large quantity of pottery fragments was recovered, as well as the essential parts (base, body, rim) of 18 vessels that could be completed afterwards. Nine of the restored vessels are presented in this exhibition. Other vessels come from the Foeni layer or from other closed complexes (pits). (M.G.)

2. Deva – “Tăualaș” (Deva, Hunedoara County)

Deva – Tăualaș archaeological site is located on the left bank of the Mureș River, just like the settlements at Turdaș, Orăștie, Tărtăria and Limba. The area where Hortensia Dumitrescu conducted excavations in 1944 is situated at the eastern limit of Deva town, northeast of the railway station, on the second terrace of the Mureș River that is 7-8 m higher than the flood plain of the

river. Two thick culture layers were identified as a result of the excavations: the lower one (I) between 1.40 and 1.80 m deep, and the upper one (II) between 0.50 and 1.20 m deep. Between these two, there is an intermediate alluvial layer (1.20 – 1.40 m), which corresponds to a flooding of the site caused by the overflow of the Mureș River. According to the specialists who studied the materials discovered here, the settlement developed at the chronological horizon between Vinča B2 (towards the end of this phase) and Vinča C1, therefore during the development of the Turdaș culture and along with the emergence of Foeni/Petrești A elements. Among the representative materials from Tăualaș settlement, we would like to mention the pottery fragments painted with a bituminous substance, also known in the specialized literature as Tăualaș painted pottery. (C.F.)

3. Ghirbom – “În Față” (Berghin Commune, Alba County)

The settlement is located west of Ghirbom village, on a gently sloping terrace of the Hamloc stream, which stretches up to the contact area with the hill known as “Fața” or “În Față”. The settlement belongs exclusively to the Petrești culture. The research carried out by I. Al. Aldea in 1971 revealed a large rectangular dwelling, and to its eastern limit the remains of a cult complex. The vessels presented here come from a cult complex considered to be a magico-religious altar, consisting of a hearth, a stone grinder, remains of burnt adobe, a painted raven head made of clay and a concave tablet made of baked clay and incised with short lines. Among the vessels discovered here, we would like to mention a pedestal vessel, a carinated bowl, a simple bowl, a small

bowl in the shape of a truncated cone, a lid, a vessel with beak, a large amphora. A bowl and a pedestal vessel have also been found in a fragmentary state. The complex dates back to the phase A-B of the Petrești culture. (M.G.)

4. Limba – “Bordane”, “Șesu Orzii”, “Vărărie” (Limba village, Ciugud Commune, Alba County)

Limba Neolithic site covers approximately 50 ha of one of the lower terraces located on the left bank of the Mureș River (at the contact area between the Mureș Valley and Secașelor Plateau). It is situated between Oarda de Jos (to the west) and Limba (to the east), and at approximately 3-4 km of Alba Iulia (to the south-southeast). The terrace varies in height (between 10 and 20 m) from the level of the Mureș River, and it is morphologically and toponymically demarcated in several areas (Bordane, Vărărie, Șesu Orzii, În Coastă, Vărar), which are also archaeologically individualized by the thickness of their deposits and habitation levels. The fact that the Mureș River forms a meander due to the confluence with the Ampoi River has influenced the site as well, a part of the terrace being eroded in time. Moreover, anthropic activities (building of the Oarda-Limba road, agriculture, hydrographical works) have destroyed parts of the archaeological site. The first archaeological excavations were carried out by the Museum of Alba Iulia in 1944 (an archaeological survey conducted by Ștefan Munteanu) and 1947 (conducted by I. and D. Berciu). Systematic research was carried out by the “1 Decembrie 1918” University of Alba Iulia (I. Paul, M. Ciută) between 1995 and 2001. The excavations revealed a very thick culture layer (sometimes reaching a depth of 2.30 m) with several Neolithic habitations, namely: Preciș level;

Starčevo-Criș IIIB (according to periodization system suggested by Gh. Lazarovici); early Vinča level (Vinča A2-A3) and classical Vinča level (B1-B2) with Lumea Nouă painted pottery. Materials belonging to the Bronze Age and Iron Age (Hallstatt and La Tène) were found only sporadically. Approximately 50 closed complexes and related features (pit houses, wattle and daub surface dwellings, cult pits, storage pits, household pits, etc.) were discovered within the Neolithic layers (especially Vinča ones). Furthermore, graves were also found within the Vinča level, thus confirming the practice of burials inside the settlement. In 1996, a trench was revealed at the limit of the area inhabited by Vinča communities, which might suggest that the settlement was demarcated by an enclosure system (probably a defensive one). (C.F.)

5. Ocna Sibiului – “Triguri” (Ocna Sibiului Commune, Sibiu County)

The Early Neolithic settlement is located on the northern part of a large and relatively high terrace (resembling a plateau) situated on the right bank of the Visa stream, approximately 300 m northeast of the Ocna Sibiului – Băi railway halt. I. Paul conducted systematic research here between 1974 and 1988. The Early Neolithic settlement was identified in 1977 as a result of the systematic excavations carried out for a Wietenberg settlement – an Early Neolithic layer and a Bronze Age layer (Wietenberg) were discovered then. Three development levels (I-III) were identified within the Early Neolithic deposits, each of them having two sublevels. The first three sublevels belong to the Preciș culture, while the last two levels belong to the classic Criș culture. (B.C.)

6. Sebeș – “Râpa Roșie”

(Sebeș, Alba County)

Also known as Rothberg, Râpa Roșie is 496 m high and is situated at the contact area between Secașelor Plateau and the Mureș Valley, on the right part of the confluence area of Secaș and Sebeș rivers. The hill looks like a steep side with “colonnades” moulded in the red rock by the long exposure to the erosion of the pluvial factors. The first archaeological research was carried out in 1865 by the rector of the Evangelic Gymnasium of Sebeș, Prof. W. Schuster, who pointed out a Coțofeni settlement on the upper plateau of the hill. In 1966, I. Al. Aldea from the Museum of Alba Iulia conducted the first systematic excavations on a small plateau called “Papuc” and located at the foot of the hill. In 1999 there was a landslide and therefore the settlement on the upper plateau was rediscovered, and in 2001 a team from the “1 Decembrie 1918” University of Alba Iulia, led by I. Andrițoiu and C. I. Popa, carried out rescue excavations. The research showed the existence of a habitation with two levels belonging to the phase III of the Coțofeni culture. C. I. Popa believes that one of the complexes discovered here (G1) had a special purpose and interprets it as a bothros or cult pit used for ritual offerings. (P.M.)

7. Sibișeni – “Deasupra satului”

(Vințu de Jos Commune, Alba County)

Sibișeni archaeological site is located on the second terrace from the left bank of the Mureș River; Pianului Valley and the present Sibișeni village demarcate it to the west, while to the north it is demarcated by the Deva-Sebeș national road. The archaeological excavations

carried out by the Museum of Sibiu (conducted by I. Paul) in 1962 led to the discovery of the largest necropolis of the Wietenberg culture (Bronze Age) with 43 graves (of which 39 incinerations and 2 burials). The fieldwalking revealed the existence of successive habitations – from the Bronze Age to the Middle Ages, which covered a relatively large area (approximately 400 m along the southern margin of the terrace and 150 m towards the inside). In 1994, “1 Decembrie 1918” University of Alba Iulia resumed the systematic research of the site, which was conducted by Ioan Andrițoiu. Except for 1999, the research continued until the year 2000. The excavations carried out in different parts of the settlement led to discoveries from the Bronze Age (Wietenberg culture, with two habitation levels, and Noua culture), First Iron Age (Basarabi culture), Dacian Period, Roman Period and Early Middle Ages (11th century), as well as to the discovery of a culture layer belonging to Late Eneolithic. It involves several complexes (pit houses, surface dwellings) belonging to the Sălcuța IV - Cheile Turzii - Herculan cultural complex, and a Coțofeni habitation level belonging to the late phase I, or early phase II, where grooved decoration (Baden type) is frequent. One example is the circular pit house divided into several areas, discovered in 1998, and which contained a rich archaeological inventory consisting especially of pottery fragments (many vessels having all the essential parts). (P.M.)

8a. Șeușa – “La Cărarea Morii”

(Ciugud Commune, Alba County)

Șeușa – La Cărarea Morii archaeological site is located in an area on the western edge of the Secașelor Plateau,

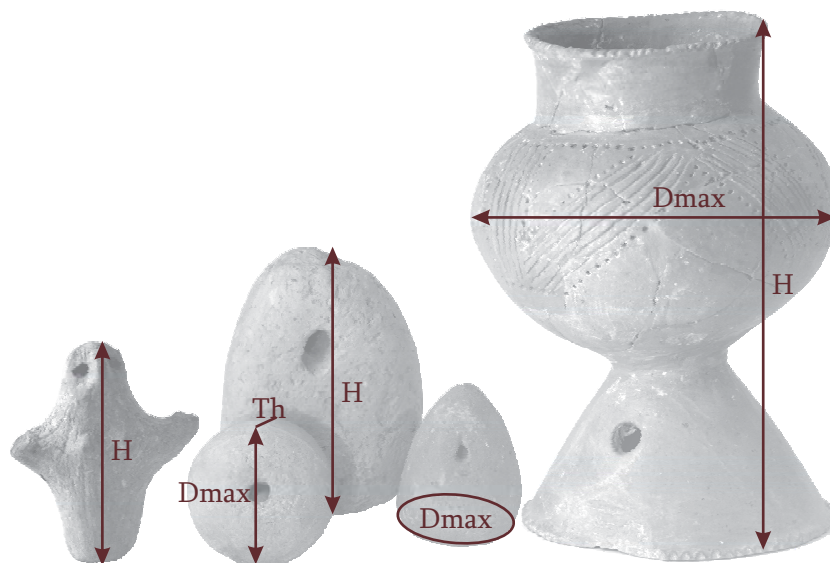
approximately 5 km of the Mureş River, across the Alba Iulia town. The settlement lies in a sheltered valley of a tributary stream from the left bank of the Mureş River (Şeuşa, Socilor Valey). The settlement was identified for the first time in 1987, when they started working at the bentonite quarry. M. Ciută and I. Paul conducted systematic and rescue excavations between 1996 and 2000. The stratigraphy of the site is a complex one, comprising several periods: Early Neolithic, Bronze Age (Wietenberg IV?), Middle La Tène (Celtic), Classic La Tène (Dacian), Roman Period, Middle Ages. The Neolithic site has two levels: a Precriş level (IC-IIA) and a Starčevo-Criş IIIB. (B.C.)

8b. Şeuşa – “Gorgan”

(Ciugud Commune, Alba County)

From a geomorphological point of view, the hill called Gorgan by villagers belongs to the western part of the Secaşelor Plateau, at the contact area between the plateau and the Middle Mureş Valley, in front of the Alba Iulia town (465 m high). To be more precise, we should add that the hill is located at approximately 4-5 km southeast of the Teleac fortified settlement, 2.5 km west of Măgura Străjii and about 6 km east of Alba Iulia town. The hill overlooks the Mureş Valley between Sântimbru and Vinţu de Jos. The first systematic research began in 2000 (conducted by M. Ciută) following the 1996 fieldwalking that had revealed Coţofeni materials. As a result of the archaeological campaigns, materials from Neolithic, Eneolithic, the transition period to the Bronze Age, and Bronze Age were discovered. Decea Mureşului and Coţofeni levels are extremely interesting. The first habitation level, which is 30-40 cm thick, belonged to

Decea Mureşului communities. Several clearly defined complexes were discovered within this level. A special example is the complex C1/2000, which is a massive rectangular wattle and daub structure that the authors interpreted as a “granary altar”. Four grinders of different shape and size, and three vessels (of which two were complete) were also found in the same complex. (B.C.)



52. General description

Locality - "Toponym", County

Period, cultural affiliation, phase
chronological interval

Description of artefact type and shape; plastic
ornaments, decoration, surface treatment; firing type;
temper; fabric; special remarks.

H - height, Dmax - maximum diameter, Th - thickness

Owner, Inventory number

References

Owners of collections

UAB - IAS - "1 Decembrie 1918" University, Systemic Archaeology Institute, Alba Iulia

MNUAI - National Union Museum, Alba Iulia

MMIRS - "Ioan Raica" Municipal Museum, Sebeș

exhibition catalogue

Starčevo-Criș cultural complex

6200 - 5300 BC

Origin

The Starčevo-Criș cultural complex belongs to Early Neolithic, and it is the first archaeological culture corresponding to the neolithisation process of the territory north of the Danube. Starčevo - Körös – Criș cultural aspects are generally considered as being part of a large Early Neolithic complex that spread across Thessaly, Macedonia, Bulgaria, former Yugoslavia, Romania and Hungary.

Periodization

In Romania, the periodization of this culture followed the one made by Milošević for Starčevo aspects in former Yugoslavia, subject to certain changes of course. The main evolutionary system, accepted by most Romanian archaeologists, is that developed by Gh. Lazarovici in 1977, with small subsequent modifications (1979, 1984). The Criș or Starčevo-Criș culture has been divided into four main phases, indicated by Roman numerals from I to IV, the earliest being phase I. These main phases have also been divided into stages indicated by letters. Thus, Starčevo-Criș I phase comprises three stages indicated by the letters A, B and C (the earliest being stage A), the other Starčevo-Criș phases (II, III and IV) having each two stages, indicated by A and B. Starčevo-Criș I phase,

the earliest horizon that actually distinguishes the neolithisation of the Carpathian Basin, which has also been defined as a monochrome horizon, is the object of a scientific debate. The controversial theory on this phase was put forward by N. Vlassa, taken over by I. Paul, and studied thoroughly by M. Ciută, who interpreted the earliest Criș material aspects as representing a distinct culture, called Precriș culture.

Chronology

Relative dating, as well as radiocarbon dating, place the Starčevo-Criș culture somewhere around 6200-5300 BC.

Distribution area

In Romania, settlements belonging to this cultural complex have been identified in Banat, Transylvania, the southern part of the country (Oltenia and Muntenia), as well as east of the Carpathians, in Moldavia.

Settlements

The settlements are generally located along rivers or on their terraces. A large number of the settlements that have been discovered so far are situated near waterways, in areas liable to flooding. However, cave settlements have also been found. Settlements located on higher grounds have been identified in Transylvania and Banat. We would like to mention some of the sites belonging to this culture and which have been systematically researched: Gornea, Dudeștii Vechi, Dubova, Cârcea, Ocna Sibiului, Gura Baciului, Șeușa, Limba, Leț, Perieni, Trestiana, Valea Lupului, etc.

Dwellings

The main types of dwellings are pit-houses, half-buried dwellings (semi pit-houses), huts and surface dwellings.

Pottery

Their pottery was made of a mixture of clay, organic material, sand and gravel. Vessels were fired in an oxidizing atmosphere, at temperatures of about 500 – 600°C. They are sometimes covered with a red slip, and in later phases there also occurs white, black or red painting. The main shapes are bowls in the shape of a truncated cone, cups and pots. The decoration techniques used included impression, barbotine, plastic or relief ornaments, incision, grooving and painting. The decoration patterns vary as well, the most common being lines, bands, triangles or spirals (for painted ornaments).

Funerary rite

The graves discovered in the area of the Starčevo-Criș culture are quite few in number. Most of them were discovered within settlements, being inhumation graves where the body was placed in a crouched position.

Interactions with other cultures

Elements of the Starčevo-Criș culture, which come into contact with Vinča elements, play a part in the genesis of the Banat culture (in the western part of Romania), and later in the genesis of the Turdaș cultural group (in Transylvania). The final Starčevo-Criș IIIB-IV

polychrome horizon, which comes into contact with linear Vinča elements, contributes to the emergence of cultural groups with painted pottery in the region of the Apuseni Mountains (including Lumea Nouă painted pottery group). In Moldavia, late Criș elements, combined with linear pottery aspects, lead to the subsequent emergence of the Precucuteni culture.(B.C.)



1. Globular vessel

Șeușa - "La Cărarea Morii", Alba

Early Neolithic, Precriș culture, phase I

cca. 6200 - 6000 BC

Globular vessel with four vertically perforated knobs; decorated with grooves displayed in oblique and parallel groups; oxidizing firing; sand as temper; fine ware.

H 10 cm, Dmax 15 cm

UAB - IAS, 2796

Ciută 2005

Starčevo - Criș cultural complex

6200 - 5300 BC

6200 - 5300 BC

Starčevo - Criș cultural complex

24



2. Bowl

Ocna Sibiului - "Triguri", Sibiu

Early Neolithic, Precriș culture, phase I
cca. 6200 - 6000 BC

Biconical bowl with prominent corner point; well burnished dark red-brick colored slip; oxidizing firing; fine ware.

H 9.3 cm, Dmax 18 cm

UAB - IAS, 2793

Ciută 2005



3. Bowl

Ocna Sibiului - "Triguri", Sibiu

Early Neolithic, Precriș culture, phase I
cca. 6200 - 6000 BC

Biconical bowl decorated with four double knobs; well burnished brick reddish slip; oxidizing firing; sand and chaff as temper; fine ware.

H 12.5 cm, Dmax 24 cm

UAB - IAS, 2794

Ciută 2002

4. Bowl

Șeușa - "La Cărarea Morii", Alba

Early Neolithic, Precriș culture, phase II

cca. 6000 - 5800 BC

Bowl in the shape of a truncated cone with impressions on the rim; well burnished brick reddish slip; oxidizing firing; fine ware.

H 5 cm, Dmax 18.8 cm

UAB - IAS, 2797

Ciută 2005



5. Pot

Șeușa - "La Cărarea Morii", Alba

Early Neolithic, Precriș culture, phase II

cca. 6000 - 5800 BC

Globular pot with impressions on the rim; brick-coloured; oxidizing firing; sand and chaff as temper; medium fine ware.

H 15.2 cm, Dmax 20.5 cm

UAB - IAS, 2795

Ciută 2005



Starčevo - Criș cultural complex

6200 - 5300 BC

6200 - 5300 BC

Starčevo - Criș cultural complex

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6. Bowl

Limba - "Bordane", Alba

Early Neolithic, Starčevo-Criș culture, phase IIIB
cca. 5700 - 5500 BC

Biconical bowl; oxidizing firing; sand as temper;
fine ware.

H 9.8 cm, Dmax 17.5 cm

UAB - IAS, 2798

Ciută 2002



7. Bowl

Limba - "Bordane", Alba

Early Neolithic, Starčevo-Criș culture, phase IIIB
cca 5700 - 5500 BC

Biconical bowl; brick-reddish slip; oxidizing firing;
sand as temper; fine ware.

H 6.4 cm, Dmax 12.5 cm

UAB - IAS, 2800

Ciută 2002

8. Bowl

Limba - "Bordane", Alba

Early Neolithic, Starčevo-Criș culture, phase IIIB
cca. 5700 - 5500 BC

Biconical bowl with four knobs; oxidizing firing;
sand as temper; fine ware.

H 7.9 cm, Dmax 11.8 cm
UAB - IAS, 2801
Ciută 2002



9. Bowl

Limba - "Bordane", Alba

Early Neolithic, Starčevo-Criș culture, phase IIIB
cca. 5700 - 5500 BC

Biconical bowl; oxidizing firing; sand as temper;
fine ware.

H 7.7 cm, Dmax 13 cm
UAB - IAS, 2802
Ciută 2002



Starčevo - Criș cultural complex

6200 - 5300 BC

6200 - 5300 BC

Starčevo - Criș cultural complex

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10. Bowl

Limba - "Bordane", Alba

Early Neolithic, Starčevo-Criș culture, phase IIIB

cca. 5700 - 5500 BC

Biconical bowl with graffiti appearance; mixed firing; sand as temper; fine ware.

H 6.3 cm, Dmax 22 cm

UAB - IAS, 2409

Ciută 2002

11. Pedestal vessel

Limba - "Bordane", Alba

Early Neolithic, Starčevo-Criș culture, phase IIIB
cca. 5700 - 5500 BC

Vessel in the shape of a truncated cone with a hollow cylindrical pedestal; brick-brownish slip; oxidizing firing; fine ware.

H 9 cm, Dmax 18 cm
UAB - IAS, 2799
Ciută 2002



12. Bowl

Limba - "Bordane", Alba

Early Neolithic, Starčevo-Criș culture, phase IIIB
cca. 5700 - 5500 BC

Biconical bowl (lippenrand) with graffiti appearance; oxidizing firing; fine ware.

H 5.8 cm, Dmax 15.5 cm
UAB - IAS, 2411
Ciută 2002



Starčevo - Criș cultural complex

6200 - 5300 BC

Vinča culture

5500 - 4700 BC

Origin

Vinča culture emerges in the Balkan region and disrupts or assimilates the older cultural complexes of that area, namely Sesklo, Starčevo-Criș, and Karanovo I-II. Throughout this process, we may identify elements belonging to the Chalcolithic cultures of the Near East, such as those of the Can Hasan and Halaf civilizations. They reached the Balkan Peninsula as a result of a migration and diffusion phenomenon, which took place towards the end of the Early Neolithic and in the beginning of the Middle Neolithic (5500 – 5000 BC).

Chronology and periodization

The research carried out in this cultural area for almost 100 years led to the understanding of the Vinča phenomenon, and to the identification of four development phases, indicated by the letters A to D. This classification is based on the remarkable stratigraphy of the Vinča site. The first three phases (A to C) can be found in Romania as well, where they develop at a

chronological level dated somewhere between 5000 and 4000 BC. Moreover, the new C14 absolute data allow a chronological framing (with certain caution) between approximately 5500 and 4700 BC.

Distribution area

This culture emerges and develops in the central and north-western part of the Balkan Peninsula, i.e. in Macedonia, Serbia, Montenegro, the eastern part of Bosnia, the north-western part of Bulgaria, the southern part of Hungary, and in the south-western part of Romania (Banat) with ethnic penetrations in south-western Transylvania and cultural influences in the north-western part of the province.

Settlements

The settlements belonging to the Vinča culture are long-term ones. Thus, the great settlements that have been studied, such as those at Parța, Liubcova, Zorlențu Mare, Chișoda Veche, Balta Sărată, Rast, Turdaș, Orăștie, Tărtăria, Limba, and Lumea Nouă, prove the long evolution of those communities, particularly if we take into consideration the thickness of the culture layer, which sometimes exceeds 2m. The bearers of this culture set up most of their settlements – either open or fortified ones (Parța, Chișoda Veche), on the terraces located near water courses in order to grow cereals there and to fish the rivers. Furthermore, this location facilitates the use of the rivers as means of transport and communication. Other settlements are situated on sand banks (Sânandrei) or on higher grounds, such as that at Zorlențu Mare. Within the settlements, there have been discovered pit

Vinča culture

5500 - 4700 BC

houses with circular or quadrilateral pits, as well as surface dwellings built on a structure made of stakes and wattle and daub. These are also quadrilateral in shape and during the developed stages of the culture some are even one story high. Within the Parța settlement, there are also buildings for cult and religious purposes.

Pottery

The pottery is divided into three categories – fine, medium fine and coarse ware. These develop differently from one phase to another, depending on the contacts with and influences of the older background (that it has already assimilated) and the neighbouring cultural areas. Typologically, there have been identified simple bowls and bowls with prominent corner point, pots, beakers, amphorae, strainers and trays, each of them having different variants according to the phases of the culture. The old phase (A) of the culture is characterized by barbotine pottery without chaff and well fired, spherical vessels (elements taken from the Starčevo-Criș background and which gradually disappear), a large quantity of fine black or greyish black pottery decorated with pleats and grooves, bowls with prominent corner point and thicker walls at the curvature, biconical vessels, hollow pedestal vessels. Black-topped pottery and the scarceness of incised decoration are also typical of this phase. During the second phase (B), the quantity of the black burnished pottery decreases, this being replaced by greyish and yellowish pottery, and pedestal vessels become heavier and the pedestal is full inside. The quality of the black-topped pottery lowers, while the decoration with incised lines and the incised dotted band become more frequent, using also angular, meander and

curvilinear patterns. The new wave of population leads, during the third phase (C), to the emergence of fine pottery varying in colour from greyish to reddish. It is also well burnished, having a metallic lustre and silvery shades. The decoration mainly consists of grooves and pleats applied in vertical, oblique and spiral patterns on the curvature of the vessels. Incision, namely decoration comprising parallel lines and dotted bands forming angular, meander and spiral patterns, as well as burnished decorations on the exterior surface of the vessels (sets of thin lines forming a grid) are also used.

Tools

The means of subsistence, as well as agriculture, fishing and hunting are reflected by the discoveries of tools and weapons. These are made of bone and antler (spatulas, smoothers, needles, awls, small chisels, dibbles), polished stone (axes, small chisels, some of them being perforated), flint and obsidian (blades, points, scrapers, borers) and beyond doubt of wood, which have not been preserved due to the friability of the material.

Plastic art

The ceramic artefacts that represent elements of the spiritual life are very diverse, certain types being reflected in the plastic art and monumental architecture and having meanings that are difficult to understand nowadays. The many discoveries made at the above-mentioned sites led to the identification of the following categories: anthropomorphic figurines, amulets, zoomorphic figurines, cult vessels, altars, and pintaderas. These artefacts have been classified into different

variants and subvariants, according to their specific features for each development stage of the culture. Closely related to the amulets, there have also been found jewellerys made of bone, ceramic, animal fangs, local shells as well as imports – spondylus shell, used to make amulets and bracelets.

Cult complexes

In the middle of the Parța settlement, there have been discovered sanctuary-like cult buildings where people brought offerings and made ritual sacrifices. These have several rooms and are well furnished (altar tables, figurines, foreheads with bullhorns, statues). We may also mention the monumental statue representing the divine couple of the Great Mother Goddess and the Bull God, her acolyte.

Funerary rite

The various discoveries of plastic art reflect the religious beliefs of that period, most of them related to the fertility and fecundity cult. These beliefs are supported by the burial ritual, which is inhumation in a crouched position. The dead were buried either within settlements, near dwellings or even under them, or in necropolises. Close to the deceased there was placed a funerary inventory (food, vessels and tools).

Interactions with other cultures

The specific elements mentioned above must be linked with the interaction, taking over, assimilation and loan processes that happen especially in the peripheral areas

of the culture. They lead to the emergence of some regional aspects where, in the beginning, the Vinča background plays an important part.

End of the culture

Gradually, the division of the cultural area, phenomenon observed by the research carried out on the Romanian territory, led to the appearance of various cultures and cultural groups, such as Vinča-Dudești, Banat culture, Turdaș culture, Lumea Nouă group, and Iclod group. Some of them preserve the Vinča elements for a longer period, while others have only Vinča influences acquired indirectly, as a result of the cultural diffusion processes. These processes also prepare the ground for the emergence of the cultures belonging to the Middle Eneolithic. (C.F.)

5500 - 4700 BC

Vinča culture

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13. Bowl

Limba - "Bordane", Alba

Middle Neolithic, Vinča culture, phase A

cca. 5500 - 5200 BC

Bowl with short, straight rim and prominent corner point; well burnished; black-topped firing; fine sand as temper; fine ware.

H 7.5 cm., Dmax 16 cm

UAB - IAS, 1055

Unpublished



14. Pedestal vessel

Limba - "Vărărie", Alba

Middle Neolithic, Vinča culture, phase A

cca. 5500 - 5200 BC

Pedestal vessel with rounded corner point and straight rim; hollow pedestal; slightly burnished exterior surface and well smoothed interior surface; mixed firing; sand as temper; fine ware.

H 18 cm, Dmax 17 cm

UAB - IAS, 2415

Unpublished

15. Bowl

Limba - "Vărărie", Alba

Middle Neolithic, Vinča culture, phase A
cca. 5500 - 5200 BC

Biconical bowl with inverted rim and rounded corner point, having two knobs symmetrically placed on the corner point; burnished surface; mixed firing; sand and organic material as temper; fine ware.

H 13.5 cm, Dmax 21 cm
UAB – IAS, 1417
Unpublished



16. Bowl

Limba - "Vărărie", Alba

Middle Neolithic, Vinča culture, phase A
cca. 5500 - 5200 BC

Bowl in the shape of a truncated cone, with straight rim; well burnished interior and exterior surface; oxidizing firing; fine sand and organic material as temper; fine ware.

H 15.5 cm, Dmax 20.5 cm
UAB – IAS, 1415
Unpublished



Vinča culture

5500 - 4700 BC

5500 - 4700 BC

Vinča culture

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17. Pot

Limba - "Vărărie", Alba

Middle Neolithic, Vinča culture, phase A
cca. 5500 - 5200 BC

Pot with short neck and straight rim, having two horizontally perforated handles above the corner point; smoothed surface; mixed firing; sand and gravel as temper; coarse ware.

H 18 cm, Dmax 14 cm

UAB - IAS, 2420

Unpublished

18. Cylindrical beaker

Limba - "Șesu Orzii", Alba

Middle Neolithic, Vinča culture, phase B
cca. 5200 - 4900 BC

Cylindrical beaker with slightly rounded body and straight rim; burnished exterior surface; mixed firing; sand as temper; fine ware.

H 10 cm, Dmax 9.5 cm
UAB – IAS, 2416
Unpublished



19. Vessel

Limba - "Șesu Orzii", Alba

Middle Neolithic, Vinča culture, phase B
cca. 5200 - 4900 BC

Vessel in the shape of a truncated cone, with straight rim; decoration consisting of small berries applied on the upper and middle part of the vessel; smoothed surface; oxidizing firing; sand as temper; medium fine ware.

H 6 cm, Dmax 10.5 cm
UAB – IAS, 2418
Unpublished



Vinča culture

5500 - 4700 BC



20. Pedestal vessel

Alba Iulia - "Lumea Nouă", Alba

Middle Neolithic, Vinča culture, phase B

cca. 5200 - 4900 BC

Vessel in the shape of a truncated cone with short pedestal and straight rim; burnished surface; black-topped firing; sand as temper; fine ware.

H 7 cm, Dmax 11.7 cm

UAB – IAS, 2791

Unpublished



21. Bowl

Limba - "Șesu Orzii", Alba

Middle Neolithic, Vinča culture, phase B

cca. 5200 - 4900 BC

Biconical bowl with slightly everted rim and short neck; burnished exterior surface (slip); oxidizing firing; sand as temper; medium fine ware.

H 11.6 cm, Dmax 14 cm

UAB – IAS, 2414

Unpublished

22. Miniature vessel

Limba - "Șesu Orzii", Alba

Middle Neolithic, Vinča culture, phase B
cca. 5200 - 4900 BC

Miniature vessel in the shape of a truncated cone, with four lobes forming a quadrilateral shape; burnished exterior surface (slip); oxidizing firing; sand and gravel as temper; medium fine ware.

H 4.2 cm, Dmax 8.9 cm
UAB – IAS, 1655
Unpublished



23. Bowl

Limba - "Șesu Orzii", Alba

Middle Neolithic, Vinča culture, phase B
cca. 5200 - 4900 BC

Biconical bowl with slightly everted rim, having four knobs on the middle part; well burnished interior and exterior surface; mixed firing; fine sand as temper; fine ware.

H 8.8 cm, Dmax 14.8 cm
UAB – IAS, 2417
Unpublished



Vinča culture

5500 - 4700 BC



24. Bowl

Limba - "Șesu Orzii", Alba

Middle Neolithic, Vinča culture, phase B
cca. 5200 - 4900 BC

Bowl in the shape of a truncated cone; burnished exterior surface; oxidizing firing; sand as temper; fine ware.

H 7 cm, Dmax 11.5 cm

UAB – IAS, 1648

Unpublished



25. Pot

Limba - "Vărărie", Alba

Middle Neolithic, Vinča culture, phase B
cca. 5200 - 4900 BC

Biconical pot with straight rim and large opening, having four elongated knobs that are horizontally and symmetrically placed on the rounded corner point; smoothed surface; mixed firing; sand and gravel as temper; coarse ware.

H 13 cm, Dmax 16.5 cm

UAB – IAS, 2419

Unpublished

26. Amphora

Limba - "Șesu Orzii", Alba

Middle Neolithic, Vinča culture, phase B

cca. 5200 - 4900 BC

Amphora with a long and narrow neck that has two symmetrically placed perforations; the vessel has two symmetrical lug handles attached at the middle of the body; decoration consists of parallel incised lines forming bands filled with dots, and of burnished bands; mixed firing; sand as temper; fine ware.

H 42 cm, Dmax 33 cm

UAB – IAS, 2421

Daisa 2000



Vinča culture

5500 - 4700 BC

Lumea Nouă cultural group

5200 - 4900 BC

Origin

The stratigraphic surveys carried out between 1944 and 1947 at Alba Iulia – Lumea Nouă Neolithic settlement revealed, for the first time, a category of painted pottery (found within the lower level) that was classified as D1. Later on, the specialized literature suggested different names for the pottery artefacts referred here, names such as Lumea Nouă painted pottery group, Lumea Nouă facies, Turdaş – Lumea Nouă complex, Lumea Nouă – Cheile Turzii complex, Lumea Nouă painted pottery horizon, Lumea Nouă – Cheile Turzii painted pottery, and CCTLNI complex. However, we may state that, up to the present, painting is the main characteristic of Lumea Nouă artefacts. Therefore, the term Lumea Nouă painted pottery shall be used to depict this type of discoveries. The analysis of Lumea Nouă painted materials has led to the conclusion that these artefacts usually appear together with Vinča incised pottery and only seldom with Turdaş incised pottery, including within closed complexes, such as pit houses. However, habitation levels with “pure” Lumea Nouă pottery, without any incised artefacts and overlapped by a Petreşti B painted pottery layer, have been found inside the caves at Cheile

Turzii. Therefore, we may not exclude the hypothesis according to which, in the case of some settlements, Lumea Nouă painted pottery actually represents ceramic imports. S. A. Luca believes that “Lumea Nouă painted pottery could be a species of the Turdaş material culture”, and he frames the Lumea Nouă painted pottery cultural group into a horizon later than Vinča B2, taking into consideration the fact that most of the painted pottery artefacts discovered are associated with Turdaş materials. There have also been more cautious wordings for these cultural aspects, such as “painted pottery belonging to a horizon later than Starčevo-Criş and earlier than Petreşti”, thus leaving open the debate regarding their genesis since the intermediate phases were not revealed by the stratigraphic research. As far as the emergence date of Lumea Nouă painted pottery and the stratigraphic context of that process are concerned, I. Paul had a reserved attitude toward the genetic cycle following the simplified succession Criş - Vinča-Turdaş (Lumea Nouă) – Petreşti. The same researcher believes that, at the present state of research, the arguments support the exclusion of Lumea Nouă pottery from the genesis of the Petreşti culture. Therefore, in a chronological sense, he called this type of materials Prepetreşti. Gh. Lazarovici has taken forward the theory suggested by N. Vlassa regarding the possibility that painted pottery groups might have been part of a unitary civilization, which developed around the Apuseni Mountains, as this kind of discoveries became more frequent. He states that, in some Vinča settlements from Transylvania, at a Vinča B1 - B1/B2 chronological level there is a contact with a cultural group with painted pottery. However, he also notes the incised ornaments become more frequent in settlements located further from that mountainous region, while the reduction of the painted ornaments is

not necessarily a rule. He also believes that all discoveries of this type should belong to one painted pottery complex (a unitary one, but which differs in details) and therefore he suggests the name Cluj-Cheile Turzii-Lumea Nouă-Iclod (CCTLNI) complex with the following groups: Tăualaș, Tărtăria-Tăualaș, Lumea Nouă, Cluj-Cheile Turzii-Iclod, Lumea Nouă-Esztar, Salca-Herpály, Suplac, and Pișcolt-Szatmar. More recently, this complex is also called CCTLNZIS (Cluj-Cheile Turzii-Lumea Nouă-Zau-Iclod-Suplac). The distribution area of this complex includes the basins of the Mureș River, Someș Rivers and Criș Rivers, as well as their tributary streams. The emergence of this cultural complex could be dated at the same time with Gura Baciului IV phase.

Chronology

Most researchers place the Lumea Nouă group at a Vinča B1-B2 chronological level, as well as at the time of the middle phase of the Pișcolt group. It is worth mentioning that at Limba – Șesul Orzii the authors of the excavation state that Lumea Nouă – Cheile Turzii painted pottery is found even from the upper part of the first level, together with Vinča A3 materials. At Alba Iulia – Lumea Nouă, the Vinča layer and the complexes containing materials belonging to the phase B, where we also find Lumea Nouă painted pottery, are overlapped by Foeni layers and complexes. Within the upper part of the Vinča layer, shapes and decoration patterns typical of the Turdaș culture rarely appear in association with Lumea Nouă painted pottery. Thus, a succession of habitation levels is revealed there, which is supported by stratigraphic evidence at Zau de Câmpie – La Grădiniță as well.

Distribution area

The presence of this category of painted pottery has been confirmed as a result of the archaeological research carried out at sites such as Limba, Tărtăria, Cheile Turzii (Balica Mare, Binder, Peștera Ungurească), and Zau de Câmpie.

Dwellings

The excavations carried out at Alba Iulia – Lumea Nouă revealed surface dwellings with beaten clay floors, covered with straw or reed. Some of the pit houses studied had also hearths with rounded edges. The research at Zau de Câmpie – La Grădiniță revealed a tell settlement. We may also assume that there existed some kind of a fortification system. The stratigraphy allowed for the identification of clay floors belonging to surface dwellings.

Pottery

The painted decoration (applied before firing) is a geometrical one consisting of sets of red or brown-chestnut lines. They are parallel, vertical, oblique or horizontal and are applied over the slip background, which is mostly yellowish white. Trichromy is obtained by painting thin parallel dark brown or black lines over the red bands. Painted decoration appears not only on the interior and exterior surfaces of the vessel, but also on the rim. The wide, arch shaped bands and the pattern resembling pearls represent the distinctive elements of the painted decoration. It is worth mentioning the particular category of the bitumen-painted pottery with

trichrome decoration (the bitumen being applied after firing) discovered at Alba Iulia-Lumea Nouă, as well as at Limba. In some cases, only traces of the bitumen-painted decoration can be found on the surface of the vessels. Some of the main vessel shapes are: hemispherical bowls with thin and arched walls and rounded inverted rim; quadrilateral four-lobed bowls; bowls with rounded, everted rim. Lumea Nouă painted pottery is made of a homogenous paste that has no impurities and generally using fine sand, organic material and silt as temper. With the help of archaeometric methods, we have discovered that Lumea Nouă pottery artefacts submitted for analyses were fired at temperatures between 600 and 900°C, while several types of fossil relics, as well as smashed sherds have been identified in the paste composition. Furthermore, in order to obtain the red or brownish red decoration, clay rich in iron oxides was used, while the slip was made of carbonate clay with a high content of illite.

Interactions with other cultures

The discoveries made in Bihor, Crișana and Sătmar highlighted shapes and decoration characteristic of the Pișcolt and Suplac painted pottery. A black, bituminous substance was used to obtain the painted decoration. I. Némethi believes that the origin of black painted pottery lies in the valleys of the Bereteu and Ieriu rivers, spreading then to the Nyírség region, Upper Tisza, and reaching even the south-eastern part of Slovakia. It has been suggested that the usage of bitumen painting for pottery decoration could be attributed to the Pișcolt communities. Then, this technique could have been transmitted to Lumea Nouă communities. The

bibliographic references indicate analogies of the Lumea Nouă painted pottery with the painted pottery cultures of Hungary (Esztár, Bükk), Slovakia (Raškovce) and Ukraine (Diakovo).

End of the culture

There are no accurate data regarding the end of the Lumea Nouă group. It is likely that this stage is related to the waves of migrations documented during Vinča C, that reached Transylvania through the Mureș valley. (M.G.)

Lumea Nouă cultural group

5200 - 4900 BC

5200 - 4900 BC

Lumea Nouă cultural group



27. Bowl

Alba Iulia - "Lumea Nouă", Alba

Middle Neolithic, Lumea Nouă cultural group,
cca. 5200 - 4900 BC

Hemispherical bowl with thin and arched walls and rounded inverted rim; burnished and having four symmetrically placed knobs; the base is slightly concave; painted decoration (trichrome) with the pattern displayed on clearly defined areas; motifs consisting of sets of brown-chestnut lines forming arches and which are applied on a white-yellowish background; thin black lines are painted over this decoration (bitumen painting applied after firing); oxidizing firing; medium fine ware.

H 9.5 cm; Dmax 13 cm

UAB - IAS, 2810

Anghel 2001



28. Bowl

Limba - "Bordane", Alba

Middle Neolithic, Lumea Nouă cultural group

cca. 5200 - 4900 BC

Hemispherical bowl with arched walls, inverted rim and four protuberances; painted decoration over a white-yellowish background; motifs consisting of circles filled with a pattern resembling rows of pearls painted in red; burnished; bitumen painting applied after firing; oxidizing firing; fine ware.

H 11.5 cm; Dmax 15.5 cm

UAB - IAS, 2809

Breazu 2000

Lumea Nouă cultural group

5200 - 4900 BC

5200 - 4900 BC

Lumea Nouă cultural group

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29. Bowl

Limba-"Bordane", Alba

Middle Neolithic, Lumea Nouă cultural group
cca. 5200 - 4900 BC

Hemispherical bowl with arched walls, inverted rim and four protuberances; painted decoration (bichrome) applied over a white-yellowish background; motifs consisting of alternate arched stripes and patterns resembling rows of pearls painted in red; burnished; oxidizing firing; medium fine ware.

H 11 cm; Dmax 14 cm

UAB - IAS, 2812

Unpublished





30. Bowl

Limba - "Șesu Orzii", Alba

Middle Neolithic, Lumea Nouă cultural group
cca. 5200 - 4900 BC

Quadrilateral bowl with straight rim and four decorative knobs symmetrically placed under the rim; painted decoration (bichrome) applied over a white-yellowish background; motifs consisting of sets of vertical (on the exterior surface) and oblique (on the interior surface) brick-reddish lines; burnished; oxidizing firing; medium fine ware.

H 7 cm; Dmax 21.5 cm

UAB - IAS, 2811

Unpublished

Lumea Nouă cultural group

5200 - 4900 BC

Foeni cultural group

4800 - 4500 BC

Origin

Initially, scientists suggested the name “Petrești A – Foeni” based on the observation that the painted pottery fragments discovered in Banat and assigned to the Petrești culture show some differences compared to the artefacts found for this culture in Transylvania. The southern origin of the Foeni group was implied even from the beginning, and in his most recently published study Fl. Drașovean brings up the possibility that Neolithic communities from Macedonia may have contributed to the genesis of this group. The above-mentioned researcher links the earliest Petrești aspects in Transylvania to a new wave of an extremely dynamic migration process. This wave is identified with the bearers of the Foeni group, i.e. tribes that reach the Mureș valley at the end of Vinča C1 phase. There are other archaeologists as well who believe that the early Petrești technological elements may have come to the Turdaș area from Banat, and that the dark red on red pottery (Foeni type pottery) forms the basis of the Petrești A painting. Specialized literature also mentions the term Foeni-Mintia. At Alba Iulia – Lumea Nouă several hollow complexes (pit houses) and surface dwellings have been identified and studied, thus

revealing archaeological material that could be considered as belonging to the repertory of shapes and decorations characteristic of the Foeni group. Stratigraphically, the closed complexes and layers belonging to the Foeni group are overlapped by a Petrești layer, which, on the basis of the painted pottery, can be dated to the developed phases of the culture. Through a comparative analysis with Foeni material from the eponym site, we may draw the conclusion that the pottery from Lumea Nouă attributed to the Foeni group presents an evolving community. The typological and stylistic analyses, together with the stratigraphic observations, are very important for the attempt to explain the genesis of the Petrești culture. At present, we believe that the Lumea Nouă site is one of the key settlements that could contribute significantly to solving this debate.

Chronology

The C14 data for the Foeni settlement are situated between 4920/4675 - 4580/4460 cal BC.

Distribution area

Foeni habitations are supported by archaeological evidence in Banat and Transylvania. Pottery typical of the Foeni group has also been identified south of the Danube at Gomolava, Vrșac – At, Banjica, and Vinča.

Settlements

The main archaeological sites of the Foeni group are Foeni – Cimitirul Ortodox, Parța – tell II, Uivar, Șag,

Foeni cultural group

4800 - 4500 BC

Unip, Mintia – Gerhat, Cauce cave, Turdaş, Alba Iulia – Lumea Nou, Petreşti – Groapa Galbenă, Noşlac, Zau de Câmpie – La Grădiniţă, Baci, and Archiud. Foeni communities choose the terraces located near watercourses in order to set up their settlements. The eponym site is a tell settlement. At Alba Iulia – Lumea Nouă, Foeni tribes settle mainly in the western area, thus leading to the growth of the Neolithic settlement. Foeni pottery has also been found in caves.

Dwellings

At the Foeni site, there have been found wattle and daub surface dwellings. We might also mention that each dwelling had a kiln. The remains of a surface dwelling have been found at Alba Iulia – Lumea Nouă, thus revealing the trenches of the foundation walls, as well as pit houses of different shapes and sizes and having pits with poles in order to hold the roof.

Pottery

Foeni communities produce very good quality pottery. They use fine clay without impurities, well-tempered and well fired until vessels become red-cherry red, orange-red, yellowish orange, brownish and black. The surface of the vessels belonging to the fine pottery category are well burnished, some of them being black-topped fired. Black ware and black-topped ware have been found in significant quantities. The chromatic effect of the black-topped pottery is obtained as a result of controlled firing, probably by placing the vessel upside down in the firing chamber and covering its upper part with ash and/or embers. Thus, the part between the

shoulder and the rim acquires a black colour, while the lower part of the vessel (towards the base) becomes reddish-yellowish or orange as a result of the oxidizing firing. The typical shapes of the Foeni pottery, identified mainly in the Banat sites, are biconical bowls with everted rim, biconical bowls, pots with two handles placed between the rim and the body, pedestal vessels in the shape of a truncated cone. Following the research carried out within the Carpathian Arch, we may also add bowls in the shape of a truncated cone and biconical bowls, pots with two handles placed on the neck, hemispherical vessels, pedestal vessels, carinated bowls – having a wide rounded carina, thus foreshadowing the carina typical of the Petreşti bowls. We may also mention the handles in the shape of a bird beak (different types), applied on fine and medium vessels, as well as the zoomorphic protomes. A special decoration is represented by a pattern obtained after modelling rows of small “berries” (often in parallel lines) on the external rim of the vessel, and also on the body. The decoration made by burnishing the surface of the vessels – the so-called burnished decoration – was widely used by these communities. Moreover, this type of decoration appears frequently on the interior surface of the vessel, as well as on the bottom, the pattern consisting of stripes forming grids or angular motifs. Painted decoration applied on the vessels before firing are also typical of the Foeni group. The painted decoration is made with red, dark-red, brown, black, and only seldom white on a reddish or orange background. Inside the vessels, there are complementary motifs. In most cases, the painted vessels are also very well burnished. The dark red on light orange pottery, decorated mainly with rows of lines forming angular motifs or a “rafter pattern”, and burnished, is known at Lumea Nouă as well. Similarly,

the pottery painted with red or brown narrow lines (forming angular bands) on the white-yellowish or orange background was discovered in the lower levels at Ghirbom – În Față, Daia Română – Părauț and Păuca – Homm. Other types of decoration consist of notches on the rim and shoulder of the vessels, incisions, grooving, and pleats. Wide rectangular or trapezoidal handles attached to the rim are another characteristic feature of the Foeni group, as well as the different types of decorative knobs applied on the vessels.

Plastic art

Foeni communities have also manufactured anthropomorphic and zoomorphic figurines made of burnt clay. This category of artefacts is known from the Alba Iulia – Lumea Nouă site. A typological and stylistic analysis of the Foeni plastic art shows that certain patterns can be found later at the anthropomorphic and zoomorphic statuettes belonging to the Petrești culture.

Funerary rite

Two inhumation graves have been discovered at Foeni and Parța – tell II. Anthropological studies indicate that Foeni communities belong to the Mediterranean type.

Interactions with other cultures

Foeni levels overlap Vinča C1 levels within the settlements from Banat. In Transylvania, at the Alba Iulia – Lumea Nouă settlement, we would like to point out the discovery of a large number of sherds decorated with Turdaș incised ornaments inside closed Foeni

complexes. Ceramic materials with ornaments characteristic of the Precucuteni culture, namely Precucuteni I/II phases, have also been found in similar stratigraphic sequences. Other important elements for the relative chronology are provided by the discovery within a complex (having a precise stratigraphic sequence) of a statuette with detachable head, found together with Foeni pottery and painted Herpály pottery (the classical phase). These facts prove that the chronological level corresponding to the end of Vinča C1 applies to the development of the Foeni communities in the settlements from Transylvania as well. (M.G.)

4800 - 4500 BC

Foeni cultural group

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31. Bowl

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Biconical bowl with rounded rim, four knobs symmetrically placed under the rim and flat base; reducing firing; large-grained sand as temper; coarse ware.

H 10.5 cm; Dmax 17 cm

UAB - IAS , 2463

Gligor 2007



32. Bowl

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Biconical bowl with raised corner point, rounded rim and flat base; it has two knobs on the body and ornaments in the shape of small berries on the outside part of the rim; mixed firing; large-grained sand as temper; coarse ware.

H 12 cm; Dmax 11 cm

UAB - IAS, 2464

Gligor 2007

33. Bowl

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Biconical bowl with raised corner point, rounded rim and flat base; burnished; black-topped pottery; mixed firing; sand as temper; fine ware.

H 9 cm; Dmax 10.5 cm
UAB – IAS, 2468
Unpublished



34. Bowl

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Biconical bowl with slightly rounded and raised corner point, rounded rim and flat base; decoration consisting of wide and not very deep incised lines; very well burnished; black-topped pottery; mixed firing; fine sand as temper; fine ware.

H 8.5cm; Dmax 13.5cm
UAB - IAS, 2459
Gligor 2007



Foeni cultural group

4800 - 4500 BC

4800 - 4500 BC

Foeni cultural group

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35. Bowl

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Biconical bowl with raised corner point, rounded rim and flat base; yellowish, grey and black slip; well burnished; mixed firing; fine sand as temper; fine ware.

H 11 cm; Dmax 15.7 cm

UAB - IAS, 2460

Gligor 2007



36. Bowl

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Biconical bowl with slightly rounded and raised corner point, rounded rim and flat base; well burnished; black-topped pottery; mixed firing; fine sand as temper; fine ware.

H 13.5 cm; Dmax 20.3 cm

UAB - IAS, 2461

Gligor 2007



37. Bowl

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group

cca. 4800 - 4500 BC

Biconical bowl with raised corner point, everted rim and flat base; very well burnished; black-topped pottery; burnished zigzag decoration on the interior surface; mixed firing; fine sand as temper; fine ware.

H 10cm; Dmax 17cm

UAB – IAS, 2792

Unpublished

Foeni cultural group

4800 - 4500 BC

4800 - 4500 BC

Foeni cultural group

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38. Bowl

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Bowl in the shape of a truncated cone with rounded rim, flat base and two decorative knobs symmetrically placed on the body; very well burnished; black-topped pottery; mixed firing; fine sand as temper; fine ware.

H 10cm; Dmax 20cm

UAB - IAS, 2457

Gligor 2007



39. Bowl

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Biconical bowl with rounded body, everted rim, flat base and two vertically perforated lug handles placed symmetrically on the vessel; oxidizing firing; fine sand as temper; fine ware.

H 15.5 cm; Dmax 18 cm

UAB - IAS, 2465

Unpublished



40. Bowl

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group

cca. 4800 - 4500 BC

Biconical bowl with low corner point and everted rim; the lower part of the body has a very large diameter and the base is slightly concave; the decoration consists of triangles filled with oblique lines made by wide and not very deep incision; very well burnished; mixed firing; fine sand as temper; fine ware.

H 10 cm; Dmax 12.7 cm

UAB - IAS, 1846

Unpublished

Foeni cultural group

4800 - 4500 BC

4800 - 4500 BC

Foeni cultural group

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41. Beaker

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Beaker in the shape of a truncated cone with a beak on the rim and flat base; mixed firing, sand as temper; coarse ware.

H 6.5 cm; Dmax 11 cm

UAB - IAS, 2466

Unpublished



42. Amphora

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Amphora with globular body, cylindrical neck and two vertically perforated lug handles placed symmetrically on the largest part of the body; burnished; fine sand as temper; fine ware.

H 27 cm; Dmax 24 cm

UAB - IAS, 2455

Gligor 2007

43. Amphora

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Amphora with rounded body, cylindrical neck and two horizontally perforated lug handles symmetrically placed on the neck; very well burnished; black-topped pottery; mixed firing; fine sand as temper; fine ware.

H 19cm; Dmax 19cm
UAB - IAS, 2454
Gligor 2007



44. Amphora

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Amphora with short rounded body, straight neck and two horizontally perforated lug handles symmetrically placed at the base of the neck; very well burnished; black pottery with orange-yellowish spots; mixed firing; fine sand as temper; fine ware.

H 14; Dmax 18.5.
UAB- IAS, 2453.
Gligor 2007



Foeni cultural group

4800 - 4500 BC

4800 - 4500 BC

Foeni cultural group

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45. Pedestal vessel

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Hollow pedestal in the shape of a truncated cone with prominently everted upper rim; red - dark red slip; burnished; oxidizing firing; sand as temper; medium fine ware.

H 30 cm; Dmax 19.5 cm

UAB - IAS, 2467

Unpublished



46. Amphora
Alba Iulia - "Lumea Nouă", Alba
Late Neolithic/Early Eneolithic, Foeni cultural group
cca. 4800 - 4500 BC

Amphora with globular body, neck in the shape of a truncated cone, straight rim and four horizontally perforated lug handles symmetrically placed on the largest part of the body; painted decoration (red – dark red over a orange-yellowish background) consisting of thick zigzag lines on the neck, sets of thin lines forming “rafters” on the upper part of the body and “commas” on the lower part of the body; the different patterns are separated by sets of horizontal lines; very well burnished; oxidizing firing; fine sand as temper; fine ware; classical Dimini/Otzaki C import.

H 23 cm; Dmax 27.5 cm
UAB - IAS, 1847
Unpublished

Foeni cultural group

4800 - 4500 BC

Petrești culture

4600 - 4000 BC

Origin

The civilization created by the bearers of the Petrești culture represents, for the Transylvanian Eneolithic, an original and complex phenomenon, extending over a remarkable territory. The issues concerning the genesis and development of the Petrești culture gave rise to debates among the researchers of that period. I. Paul, the author of the monograph of this culture, believes that the genesis of the Petrești culture was based on the old Neolithic background, originating from the area of the Aegean Sea, Anatolia and Minor Asia. He also states that the subsequent development of the culture led to the emergence of representative features resulted from a combination of independent original aspects and ethnic and cultural influences coming from the neighboring cultural areas. N. Vlassa considered the Petrești culture emerged from the local Tărtăria – Tăulaș and Lumea Nouă facies. These preceded the Petrești culture genetically, chronologically and territorially, and developed from the Turdaș culture. According to the opinion of Gh. Lazarovici, either the origin of the Petrești culture was based on the Vinča C phase, or the culture contained southern elements associated with the Vinča C migration. Fl. Drașovean states that the Foeni group played a substantial part in the emergence of the Petrești culture since the bearers of the Foeni group spread from Banat to Transylvania through the Mureș valley as a result of a migration process. In a very recent study, Gh. Lazarovici concludes that the Foeni migration gave birth to the Petrești culture in Transylvania.

Periodization and chronology

Starting from stratigraphic observations corroborated with typological and stylistic investigations of the painted pottery, I. Paul has identified three main development phases indicated by A (the early phase), A-B (the middle phase) and B (the final phase). The C14 samples provided absolute data between 3950-3760 BC for the phase A of the Petrești culture. One may note that the Foeni group and the phase A of the Petrești culture are contemporaneous to some extent. Starting from the stratigraphic data obtained for the extra-Carpathian area, recent archaeological research dates the beginning of the Petrești culture towards the end of the Vinča C1 phase.

Distribution area

The monograph of the culture presents 62 settlements located inside the Carpathian Arch and reflects the state of the research at that moment. The research carried out during the last decades led to the identification of new archaeological sites with discoveries belonging to the Petrești culture, its repertory comprising now almost 150 sites.

Settlements

The representative settlements of the Petrești culture are considered to be those at Daia Română – Părăuț and Păuca – Homm (for the phase A), Mihalț – Măticuța and Ghirbom – În Față (for the phase A-B), Pianul de Jos – Podei and Cheile Turzii (Balica Mare, Peștera Ungurească) (for the phase B). Other settlements having

Petrești habitation levels and which have been researched are those at Alba Iulia – Lumea Nouă, Petrești – Groapa Galbenă, Noșlac, Răhău, Turdaș – La Luncă, Turdaș – La Gușata, Șeica Mică, Cașolț – Poiana în Pisc. Processes such as the “swarming” and the setting up of pair-settlements are characteristic of the Petrești communities and their mobility is proved by the large number of settlements, as well as by seasonal habitations, including those in caves.

Dwellings

The building of the first large surface dwellings with platform is attributed to the bearers of the Petrești culture. The main types of dwellings with clay and wooden platform are: dwellings with platform made of beams or split wood, built directly on the ground; dwellings with wooden platform placed either on piles at a variable distance from the ground, or partially on piles and with a part of the platform fixed to the ground. There have also been discovered pit houses and semi-buried dwellings.

Pottery

Ceramic vessels manufactured by the Petrești communities have been classified, according to the paste composition, manufacturing techniques, and firing methods, into three main categories: coarse, medium and fine pottery. Fine pottery is made of a homogenous paste, using fine sand as temper. Oxidizing firing in kilns with firing chamber led to a very good quality, orange or brick-coloured paste. Archaeometric analyses revealed the fact that Petrești pottery artefacts were fired at

temperatures higher than 850°C. Monochrome (I), bichrome (II) and trichrome (III) painting appear during all phases of the culture. Starting from the decorative patterns identified, these have been divided into stylistic groups and variants indicated by a, b, c, etc. The background of the painted decoration is made through the application of a fine and even layer, i.e. the slip (having different colors during the development of the Petrești culture), which in most cases was also well burnished. The fundamental decorative elements are linear and geometrical ones, applied on the surface of the vessel before the firing (a developed technique). Decorations include spirals, meanders, network patterns, chess table and linear patterns, lozenges. There are many cases when the rim or the interior surface of the vessel are also painted with complementary patterns. The decoration is based on a tectonic view, namely the surface of the vessel is divided into decorative areas. The basic colours of the chromatic palette used for Petrești painted pottery are white, red and black. However, they have different shades and thus we may also find colours such as yellowish-white, cream, orange, blood red (terracotta), brown-red (burnt sienna), brown (burnt umbra), chocolate and dark brown. The characteristic shapes of the Petrești culture consist mainly of carinated bowls and pedestal vessels, fruit bowl type vessels, beakers and pots. They are made using different manufacturing techniques and painted decoration is applied especially on these vessels.

Tools

Petrești communities manufactured flint tools, unperforated stone axes, hammer-axes with cross

perforation, bone and antler tools, clay weights and spindle whorls. A few fragmented copper artefacts belonging to the phase A-B have been found within the distribution area of the culture.

Cult complexes

The cult complexes at Ghirbom – În Față, Pianul de Jos – Podei și Uioara de Jos (Alba County) are considered to be relevant discoveries for the spiritual life of the Petrești communities. We may also add here the cult pits at Cașolț – Poiana în Pisc. The above-mentioned discoveries not only illustrate a new way of performing an agrarian magico-religious ritual, but also confirm the use of painted pottery especially for the magical and religious practices and emphasize the special features attributed to this type of artefacts.

Plastic art

The characteristic modelling patterns are based on features such as the schematism and geometrism, and also the lack of painted decoration. The statuettes belonging to the first phase are characterized by marked steatopygy, the waist only slightly indicated, long neck in the shape of a truncated cone and parts of the body decorated with sets of incised lines. During the expansion and maximum development phases, steatopygy is moderate, the body is better proportioned and the waist is correctly indicated. Mainly female statuettes have been discovered within the development area of the Petrești culture. During the phases A-B and B there are also masculine statuettes, which correspond to a new feature of the spiritual life. The zoomorphic

artefacts made of burnt clay mainly represent horned animals.

Funerary rite

The funerary rites practised by the Petrești culture communities are represented by the crouched inhumation within the settlement. However, up to the present, there are no known cemeteries, and there is no evidence of any specific funerary rite or inventory.

Interactions with other cultures

Ceramic artefacts, which take over shapes and decorative patterns of the Turdaș and Gumelnița cultures, have been found within Petrești settlements. A painted pedestal having analogies with the Herpály culture was found at Pianul de Jos. Hungarian archaeologists have also noticed possible Petrești imports in the settlements at Berettyóújfalu-Herpály and Vésztő-Mágor.

End of the culture

The end of the Petrești culture is linked to the ethnic and cultural issues that led to the penetration of the steppe populations having strong shepherd features and patriarchal social and economic organization. In the caves at Cheile Turzii, the Petrești layer – (final phase B) is overlapped by a level with ceramic material belonging to the cultural horizon of applied handles. For the settlements of the middle Mureș basin, there is archaeological evidence that Petrești habitation levels are overlapped by remains of Coțofeni material culture. (M.G.)

4600 - 4000 BC

Petrești culture

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47. "Fruit bowl"

Alba Iulia - "Lumea Nouă", Alba
Early Eneolithic, Petrești culture, phase A
cca. 4600 - 4400 BC

"Fruit bowl" with hollow pedestal in the shape of a truncated cone; the upper part is similar to a bowl in the shape of a truncated cone with rounded rim; oxidizing firing; sand as temper; fine ware.

H 14,5 cm; Dmax 22 cm
UAB - IAS, 2839
Unpublished



48. Pot

Alba Iulia - "Lumea Nouă", Alba
Middle Eneolithic, Petrești culture, phase A-B
cca. 4400 - 4200 BC

Globular pot with rounded, slightly everted rim and two decorative knobs symmetrically placed on the body; oxidizing firing; large-grained sand as temper; coarse ware.

H 24 cm; Dmax 23 cm
UAB - IAS, 2840
Unpublished



49. Amphora
Alba Iulia - "Lumea Nouă", Alba
Middle Eneolithic, Petrești culture, phase A/A-B
cca. 4600 - 4200 BC

Large pyriform vessel with convex, slightly deformed body, cylindrical neck, rounded rim and four conical knobs symmetrically placed on the largest part of the body; oxidizing firing; sand as temper; medium fine ware.

H 53 cm; Dmax 40 cm
UAB - IAS, 2841
Unpublished

Petrești culture

4600 - 4000 BC

4600 - 4000 BC

Petrești culture

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Ghirbom - "În Față", Alba

Middle Eneolithic, Petrești culture, phase A-B,
cca. 4400 - 4200 BC

50. Bowl

Bowl in the shape of a truncated cone with triangular inverted rim, concave base and two decorative hemispherical knobs symmetrically placed at the contact line between the rim and the body; painted decoration with brown curvilinear and net motifs over a white-yellowish background; burnished; oxidizing firing; sand as temper; medium fine ware.

H 15 cm; Dmax 42,5 cm

MNUAI, P 5894

Aldea 1974

51. Pedestal

Cylindrical pedestal empty inside, the lower part is larger than the upper one and the rim is rounded, thick and everted; painted decoration (partially preserved); oxidizing firing; sand as temper; medium fine ware.

H 34,2 cm; Dmax 18,8 cm

MNUAI, P 5892

Aldea 1974



52. Bowl
 Ghirbom - "În Față", Alba
 Middle Eneolithic, Petrești culture, phase A-B
 cca. 4400 - 4200 BC

Carinated bowl with sharp carination, short inverted neck, rounded rim, flat base and two decorative hemispherical knobs symmetrically placed on the carination; painted decoration with brown curvilinear and net motifs over a white-yellowish background; burnished; oxidizing firing; sand as temper; medium fine ware.

H 19,3 cm; Dmax 43 cm
 MNUAI, P 5893
 Aldea 1974

Petrești culture

4600 - 4000 BC

Decea Mureşului cultural group

4200 - 4000 BC

Origin

Decea Mureşului group, also called Decea Mureşului-Csongrád group or complex, is not well enough known at present and therefore the debates concerning its definition and origin are still controversial ones. According to older views, this group represents a foreign ethnic entity, which left the steppes north of the Black Sea and settled among the Neolithic communities in Transylvania. Following the same line of thought, Blagoje Govedarica believes that Decea Mureşului communities are an enclave of the Early Ochre Grave Complex and includes them in the Carpathian group of the above-mentioned complex. The generally accepted theory is that the group represents a cultural phenomenon which results from the combination of allogeneous, steppe elements coming from the area of the Srednîi Stog culture, east of Dnieper, with the local Eneolithic ones (Tiszapolgár, but also late Petreşti).

Chronology

Although there have been opinions according to which Decea Mureşului group is contemporary with, or even subsequent to the Bodrogkeresztúr culture, nowadays this cultural phenomenon is placed at the border between Tiszapolgár and Bodrogkeresztúr cultures, or

within a transition stage from the Tiszapolgár culture to the Bodrogkeresztúr culture (the absolute chronology date is 4000 BC, which marks the end of the first culture and the beginning of the latter). According to B. Govedarica, Decea Mureşului group can be placed within the second stage of the Early Ochre Burial Complex. This complex lasts for about 650 years, between 4650-4000 cal BC. The only C14 date comes from a sample taken from grave no. 12 at Decea Mureşului and indicates 5380 ± 40 BP: 4237 cal BC.

Distribution area

The distribution area of the Decea Mureşului group is linked, in S.A. Luca's view, to the Mureş valley in general, and to the middle Mureş valley in particular. According to an older opinion of Gh. Lazarovici, Decea communities occupied the Transylvanian Plain and Plateau, an area where there are no late Tiszapolgár communities. The most western Decea Mureşului discovery is that at Csongrád-Kettőshalom (Hungary), which could indicate that Decea communities have spread across a wider territory than that known up to present. Systematic archaeological research has been carried out only at Decea Mureşului (Alba County) where, at the beginning of the 20th century, an inhumation necropolis was discovered, and at Şeuşa-Gorgan (Alba County) from 2000 on.

Settlements

The present state of research and the low number of discoveries does not allow for a general characterization of settlements and dwellings belonging to Decea

communities. Specialists consider that they preferred terraces and low areas close to the Mureş floodplain. However, the discoveries at Şeuşa-Gorgan show that they have also settled in the hills, i.e. in higher areas that offer a good visibility across the Mureş valley. Apart from the settlements at Şeuşa-Gorgan and Aiud-“Microraion III”, which are still under debate concerning their cultural attribution, other settlements have also been recorded at Mirăslău and Meşcreac (Alba County), Luduş and Sântioana de Mureş (Mureş County).

Dwellings

Decea communities used both pit houses and surface dwellings. At Aiud-Microraion III, Decea Mureşului materials have been discovered inside a pit house. The discoveries made at Şeuşa-Gorgan indicate approximately rectangular surface dwellings.

Typical artefacts

The vessels manufactured by the potters of the Decea Mureşului cultural group have quite simple shapes. The pottery is generally fine and medium-fine, while the colour varies from brown and grey to yellowish-brick and yellowish. Characteristic shapes are calotte bowls, bowls with curved body and a handle on the belly, and bowls with slightly everted rim. Vessels are rather poorly decorated. The decoration consists mainly of prominences applied on the vessels, in the shape of conical knobs or small lug handles (perforated or not), and more rarely of annular or circular impressions belonging to the Tiszapolgár tradition. Just like other

Eneolithic communities (Tiszapolgár, Bodrogkeresztúr, Gumelniţa, Cucuteni, Sălcuţa), Decea communities use a large range of flint blades or knives. Hard rocks are used to grind four-lobed bludgeons, a tradition inherited from the steppes north of the Black Sea. These could be used either as symbols of power (sceptres), or as weapons (maces). The copper artefacts, discovered mainly in the necropolis at Decea Mureşului, are an axe with crossed arms, different types of needles and jewellery such as beads or necklaces. The perforated discs made of river shells are also used as jewellery, either for necklaces or for adorning the clothes.

Funerary rite

The particularities of the funerary rite performed by Decea Mureşului communities represent the specific feature of this cultural group, the element that differentiate it from other Eneolithic cultures. These communities bury their dead in flat cemeteries. Up to present, only one necropolis has been identified at Decea Mureşului (containing 15 undisturbed graves and traces of 4 other graves), while one grave has been discovered at Csongrád-Kettőshalom. The graves are generally oriented towards northwest-southeast and are individual or double ones. The dead are placed on their back, with the knees up. The original position of the legs has been preserved only at Csongrád-Kettőshalom, while at Decea Mureşului the legs fell down either on the left or on the right side of the body. Together with the bodies, they have also placed different artefacts representing the funerary inventory but also offerings, such as flint knives (obsidian knives at Csongrád), a four-lobed bludgeon, a doubled blade cooper axe, needles, awls, beads and a

copper necklace, strings of shells. Red ochre appears in all graves, in larger quantities at the toes, but sprinkled also over the body or around the head. Two skeletons from Decea Mureşului have traces of skull trephination.

Interactions with other cultures

The penetrations of the eastern communities in the Carpathian area have caused strong pressures and population movements from one area to another, thus leading to the emergence of new cultures or creating “mixtures” that are difficult to frame. From this point of view, Decea Mureşului cultural group could represent an even more complex phenomenon than it has been considered. The materials found at Şeuşa-Gorgan play an important role in the clarification, or maybe in the complication of this issue. The authors of the discovery, M. Ciută and A. Gligor, have used different terms to frame those materials, terms such “Tiszapolgár horizon”, “final Tiszapolgár”, “transition phase to the Bodrogkeresztúr culture”, “Tiszapolgár-Decea Mureşului horizon”, and in the end “Decea Mureşului cultural phenomenon”. The shapes and decoration of the vessels discovered at Şeuşa, which have obvious analogies with those from Decea Mureşului, belong to the Tiszapolgár tradition (hemispherical vessels, bowls with slightly everted rim, attachment of the handles to the rim, decoration consisting of circular impressions). The composition, firing technique and colour of the vessels remind us of Petreşti pottery. This is probably due to those late Petreşti communities in the south and centre of Transylvania, whose existence is presumed by S.A. Luca, and which might have interacted with Decea Mureşului group or even contributed to its genesis. As a

matter of fact, a previous Tiszapolgár-Petreşti B contact has been proved by the discoveries at Nandru-Peştera Curată and Peştera Spurcată. The ceramic fragment decorated with parallel incisions in the shape of a net, discovered at Şeuşa-Gorgan and assigned to the Bodrogkeresztúr culture, also supports the interactions and contemporaneity with the Bodrogkeresztúr culture, which have already been stated in the specialized literature. Furthermore, the bowl with slightly outturned rim, found both at Decea Mureşului, and at Şeuşa-Gorgan and Aiud-Microraion III, has analogies with Bodrogkeresztúr at Pălatca and Luduş (in case that cultural framing is still valid). The materials discovered at Aiud-Microraion III, which H. Ciugudean consider to be a local facies of the Herculană – Cheile Turzii complex, are also extremely interesting due to their heterogeneous nature and the analogies with Tiszapolgár, Sălcuţa IV, and Bodrogkeresztúr. We may not exclude the hypothesis according to which Decea group has contributed to the emergence of the Bodrogkeresztúr culture.

End of culture

The end of Decea Mureşului cultural group is related to the development of Bodrogkeresztúr communities in the area of the Mureş River. (P.M.)

4200 - 4000 BC

Decea Mureșului cultural group

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53. Miniature vessel

Șeușa - "Gorgan", Alba

Middle Eneolithic, Decea Mureșului cultural group
cca. 4200 - 4000 BC

Biconical vessel with short neck, straight rim and two horizontally perforated handles attached to the rim; smoothed and slightly burnished surface; oxidizing firing, sand and limestone grains as temper; medium fine ware.

H 6.8 cm, Dmax 7.8 cm

UAB - IAS, 2825

Ciută, Gligor 2006



54. Cup

Șeușa - "Gorgan", Alba

Middle Eneolithic, Decea Mureșului cultural group
cca. 4200 - 4000 BC

Biconical vessel with slightly prominent corner point, slightly everted rim and one horizontally perforated handle attached to the rim; smoothed and slightly burnished surface; mixed firing; sand as temper; fine ware.

H 5.8 cm, Dmax 10 cm

UAB - IAS, 2821

Ciută 2007

55. Cup

Șeușa - "Gorgan", Alba

Middle Eneolithic, Decea Mureșului cultural group
cca. 4200 - 4000 BC

Hemispherical vessel with slightly everted rim and horizontally perforated handle attached to the rim; smoothed surface; oxidizing firing; fine sand as temper; medium fine ware.

H 5.4 cm, Dmax 11 cm
UAB - IAS, 2816
Ciută 2007



56. Cup

Șeușa - "Gorgan", Alba

Middle Eneolithic, Decea Mureșului cultural group
cca. 4200 - 4000 BC

Vessel in the shape of a truncated cone with unperforated handle attached under the rim; slightly burnished surface; oxidizing firing; large-grained sand and limestone grains as temper; medium fine ware.

H 6.2 cm, Dmax 12 cm
UAB - IAS, 2813
Ciută 2007



Decea Mureșului cultural group

4200 - 4000 BC

4200 - 4000 BC

Decea Mureşului cultural group

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57. Bowl

Şeuşa - "Gorgan", Alba

Middle Eneolithic, Decea Mureşului cultural group
cca. 4200 - 4000 BC

Vessel in the shape of a truncated cone with slightly everted rim and two conical prominences under the rim; smoothed and slightly burnished surface; oxidizing firing; sand and possibly organic material as temper; medium fine ware.

H 5.8 cm, Dmax 11.7 cm

UAB - IAS, 2826

Ciută, Gligor 2006



58. Bowl

Şeuşa - "Gorgan", Alba

Middle Eneolithic, Decea Mureşului cultural group
cca. 4200 - 4000 BC

Vessel in the shape of a truncated cone with slightly inverted rim; smoothed surface; mixed firing; fine sand as temper; medium fine ware.

H 5.8 cm, Dmax 12 cm

UAB - IAS, 2820

Ciută, Gligor 2006

59. Bowl

Șeușa - "Gorgan", Alba

Middle Eneolithic, Decea Mureșului cultural group
cca. 4200 - 4000 BC

Vessel in the shape of a truncated cone with a conical prominence under the rim; smoothed surface; sand and limestone grains as temper; medium fine ware.

H 6 cm, Dmax 12 cm
UAB - IAS, 2815
Ciută, Gligor 2006



60. Bowl

Șeușa - "Gorgan", Alba

Middle Eneolithic, Decea Mureșului cultural group
cca. 4200 - 4000 BC

Hemispherical vessel with two prominences symmetrically placed under the rim; smoothed surface; oxidizing firing; fine sand as temper; medium fine ware.

H 6.2 cm, Dmax 12.2 cm
UAB - IAS, 2824
Ciută, Gligor 2006



Decea Mureșului cultural group

4200 - 4000 BC

4200 - 4000 BC

Decea Mureşului cultural group

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61. Bowl

Seuşa - "Gorgan", Alba

Middle Eneolithic, Decea Mureşului cultural group
cca. 4200 - 4000 BC

Hemispherical bowl with everted rim and a conical prominence under the rim; smoothed surface; oxidizing firing; large-grained sand and limestone grains as temper; medium fine ware.

H 6.3 cm, Dmax 12.2 cm

UAB - IAS, 2814

Ciută 2007



62. Bowl

Seuşa - "Gorgan", Alba

Middle Eneolithic, Decea Mureşului cultural group
cca. 4200 - 4000 BC

Biconical vessel with slightly prominent corner point, slightly everted rim and a conical prominence on the corner point; smoothed surface; oxidizing firing; sand and limestone grains as temper; medium fine ware.

H 7.1 cm, Dmax 11.7 cm

UAB - IAS, 2817

Ciută, Gligor 2006



63. Pedestal vessel
Șeușa - "Gorgan", Alba

Middle Eneolithic, Decea Mureșului cultural group
cca. 4200 - 4000 BC

Vessel with pedestal in the shape of a truncated cone, spherical body, straight neck and slightly everted rim; impression decoration on the rim and at the base of the pedestal, while on the body there are circular impressions associated with angular sets of incised lines encrusted with white paste; the pedestal has two symmetrically placed circular perforations; oxidizing firing; sand and limestone grains as temper; medium fine ware.

H 23.5 cm, Dmax 16.5 cm
UAB - IAS, 2827
Ciută, Gligor 2006

Decea Mureșului cultural group

4200 - 4000 BC

4200 - 4000 BC

Decea Mureșului cultural group

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64. Vessel

Șeușa - "Gorgan", Alba

Middle Eneolithic, Decea Mureșului cultural group
cca. 4200 - 4000 BC

Bell-shaped vessel with slightly inverted rim and decorated with four conical prominences; uneven surface; oxidizing firing; large-grained sand and crushed sherds as temper; coarse ware.

H 10.6 cm, Dmax 12.5 cm

UAB - IAS, 2822

Ciută 2007



65. Amphora

Șeușa - "Gorgan", Alba

Middle Eneolithic, Decea Mureșului cultural group
cca. 4200 - 4000 BC

Large pyriform vessel with straight neck and rim, and two lug handles attached to the largest part of the body; smoothed surface; oxidizing firing; fine sand as temper; medium fine ware.

H 41.5 cm; Dmax 30.5 cm

UAB - IAS, 2818

Ciută 2007



66. Storage vessel

Șeușa - "Gorgan", Alba

Middle Eneolithic, Decea Mureșului cultural group

cca. 4200 - 4000 BC

Large vessel in the shape of a truncated cone with inverted rim; decorated with four prominences under the rim and four lugs, with false horizontal perforation, placed under the largest part of the body; smoothed surface; oxidizing firing; large-grained sand and crushed sherds as temper; coarse ware.

H 38.5 cm; Dmax 40.5 cm

UAB - IAS, 2828

Ciută 2007

Decea Mureșului cultural group

4200 - 4000 BC

Coțofeni culture

3300 - 2600 BC

Origin

Coțofeni culture is one of the most important and interesting cultures belonging to the final Eneolithic period in Romania. If one attempts to define the Coțofeni culture for a larger area, it cannot be separated from the Baden culture. The Baden-Coțofeni “cultural block”, which extends over a vast area, can be found as “Coțofeni culture” in Transylvania, Banat, Oltenia, western half of Muntenia, including in north-western Bulgaria, and as “Baden culture” in Tisza Plain, Hungarian steppe, Transdanubia, Slavonia, Slovakia, Austria (east of the Alps) and Moravia. Across this whole area, there are a series of cultural elements having common features, especially those concerning pottery. However, these are also rather diverse as forms of habitat at a regional level.

Distribution area

Up to the present, almost 850 discoveries (sites) are known in the area of the Coțofeni culture, most of them being settlements, but many of them having only one habitation level.

Chronology

Coțofeni culture emerges at the end of the transition period from the Neolithic to the Bronze Age, being defined as final Eneolithic by some authors and dated

back at about 3300-2600 BC. The periodization of this culture was initially based on the two decoration techniques: successive stitches and prominences in the shape of lentil beans. P. Roman, who divided the development of the culture into three phases, introduced the generally accepted periodization system in 1976.

Settlements

The types of settlements vary according to their geomorphological environment. During the early phases, settlements are located along rivers and on their terraces, while in the later phases they are situated on higher grounds, namely hills and mountains, even at an altitude of 1000 m. Settlements belonging to later phases are smaller and some of them were only seasonally inhabited. The main sites belonging to this culture and which have been studied are: Coțofeni (jud. Dolj); Medieșu Aurit (Satu Mare County); Băile Herculane-„Peștera Hoților”; Șincai-„Cetatea Păgânilor”; Călnic, Sebeș -„Râpa Roșie”, Poiana Ampoiului, Meteș, Pianul de Jos, Șeușa-Gorgan (Alba County); Cheile Turzii-„Peștera Ungurească” (Cluj County).

Dwellings

The main types of dwellings discovered during archaeological research are pit-houses, huts and surface dwellings. In the thoroughly studied sites, other types have also been found. At Călnic, 15 rectangular dwellings were discovered, each having two rooms and one or several hearths; the homes were placed one next to the other over the whole surface of the terrace. At Șincai, dwellings were also rectangular and alternated

with shallow pit-houses (about 40-50 cm). The building material consisted mainly of wattle and daub (we may assume that in the mountain area wood was the main building material). Cave settlements have also been found.

Pottery

Characteristic shapes are represented by bowls, cups with raised handle, jugs, amphorae, pots, beakers, globular vessels, jar-pots, juglets. The main decoration types for Coțofeni pottery are: 1. through hollowing out, namely a) incision; b) impression with successive stitches, Furchenstich; c) grooving; d) striation; 2. relief decoration; 3. through incrustation. The jewellerys are pendants in the shape of eyeglasses, which is a pattern usually found for this culture.

Funerary rite

The funerary rite commonly found for this culture is inhumation in flat graves and tumuli, and also cremation. Unlike for the Baden culture area, where several necropolises (mainly inhumation ones) have been identified, there is no proper necropolis known in the Coțofeni culture area. The graves discovered were mainly inhumation graves and only seldom cremation graves (Medieșu Aurit, Satu Mare County, and Cârna, Dolj County). If we leave out isolated graves, some in caves and some within settlements or open spaces (there are around 20 such burials, most of them being uncertain), we may presume that the funerary rite typical of the Coțofeni culture is the tumulus burial.

Interactions with other cultures

Relationships have been found with the Baden culture as well as with the Kostolac, Vučedol, Șoimuș, Copăceni and Roșia cultural groups. Several authors believe that some shapes or patterns of the Wietenberg culture come from the Coțofeni repertory.

End of the culture

The end of the Coțofeni culture cannot yet be precisely determined. The relationship with the Wietenberg culture, which characterizes the developed period of the Bronze Age in Transylvania, is not very accurate. Between the two stages, there is a series of discoveries, especially funerary ones, located in the middle basin of the Mureș River, which cannot be framed into a well-defined culture and whose lengths cannot yet be determined – see Șoimuș, Roșia and Copăceni groups, as well as the western Transylvanian tumulus group (Livezile). Nevertheless, the radiocarbon data indicate that the end of this culture is before the middle of the 3rd millennium B.C., i.e. between 2780-2580 BC.

(B.C.)

plastic art

5500 - 4200 BC

Clay was used not only for the manufacturing of vessels, but also for the production of other artefacts with more or less defined functions, such as figurative representations, models of dwellings, small models of altars, devices for lighting, etc. Most of these artefacts are interpreted as evidences for various aspects of the spiritual life of prehistoric communities, and they are often studied separately, ignoring the context in which they have been discovered and the materials associated with them.

Figurative representations, such as figurines or statuettes, and anthropomorphic and zoomorphic statues, are included in the category of plastic art (category of artefacts made of plastic or easy modelled materials, i.e. clay in this case) and are often called “idols” in the specialized literature, which is an inappropriate term.

The majority of the figurative representations discovered for the Neolithic and Eneolithic periods are anthropomorphic ones, and therefore the studies related to this category are more frequent than those for the zoomorphic representations.

In Europe, the first anthropomorphic statuettes made of clay were known since Gravettian, in the Palaeolithic Age, about 30.000 years ago. However, the human communities of Late Palaeolithic and Mesolithic Age forgot this tradition, which then reappeared several thousand years later in the Neolithic Age. Researchers agree that the emergence of Neolithic statuettes is related

to the development of agricultural economy in the Fertile Crescent (Middle and Near East) and its spreading across Europe. It seems that new types of representations (initially made of stone and unbaked clay), different from the Palaeolithic ones, were invented in the Near East since the Aceramic Neolithic (approximately 11.500 years ago). According to the German archaeologist Svent Hansen, that was the period when the “prototypes” for the modelling of Neolithic and Eneolithic statuettes were created. The French researcher Jacques Cauvin goes even further and states that before the economic “revolution” (emergence of agriculture) which marks the beginning of Neolithic, there was also an ideological and religious “revolution of symbols” that triggered the economic transformations and which took place in the Near East about 12.000 years ago. In his opinion, this new ideology is supported by the many plastic representations of that period, which reveal the existence of a dual religious system concentrated around two symbol-characters. Thus, there is a dominant female character (“The Supreme Being”, “The Great Mother”, “The Universal Mother”), a symbol of the feminine principle, and a male character subordinate to the female one, a symbol of the masculine principle, which was initially illustrated by zoomorphic representations (the bull) and later by masculine anthropomorphic representations.

In the South East Europe, the Neolithic and Eneolithic periods are characterized by a large number of various anthropomorphic figurines made of clay, which disappear almost completely during the subsequent periods (Bronze Age and Iron Age), except for the Mediterranean region. Thousands of figurines have been discovered only on the Romanian territory, the majority

of them being female figurines, while the male figurines are quite rare. Nevertheless, a large number of them have no attributes (neither female, nor male ones).

The statuettes have different shapes and sizes related to certain standards and rules specific to each culture. In most cases, they are rendered in a stylised manner and may vary in size from very small ones (only a few centimetres) to very large ones, such as the monumental statues discovered in the sanctuaries at Parța (Banat culture) and Hăbășești (Cucuteni culture). The shape, position and “attitude” of the statuettes can also be very different. Thus, apart from the majority of the figurines with a vertical position (standing), there have also been discovered statuettes that have a seated or lying position. Some have their arms along the body, others have the arms raised up or laterally; some have very well defined face features, while with others these are only suggested; certain types of statuettes have a detachable/mobile head, that was modelled separately. There are also complex and composite representations, such as androgynous figurines (having both feminine and masculine attributes), two-headed figurines, couple statuettes (interpreted as a symbol of “hierogamy” or the sacred union between a female deity and a male deity), statuettes representing the mother holding the baby in her arms (Kourothrophoi), anthropomorphic figurines with masks or even with animal head, etc.

The context in which these figurines or statuettes have been discovered is also extremely varied. They were found in settlements – inside dwellings or special buildings (public buildings or sanctuaries), or laid inside ritual pits or cult complexes, as well as in necropolises –

buried together with the dead. In most cases, the statuettes were discovered in a fragmentary state. The context of discovery, together with particular aspects related to the shape and the patterns used to decorate and differentiate the figurines, as well as the nature of the paste are elements that specialists use in their endeavour to decipher their function. They also try to establish the defining types for each culture and to discover details regarding the clothes or hairstyles of those communities.

The attempt to discover the function and usage of these artefacts has led to a whole literary production, and often a controversial one. It is generally accepted that the figurines had a symbolic meaning and therefore the theories regarding their significance have remained mere hypotheses. Most researchers link the figurines to the spiritual sphere and consider that they are part of the beliefs or religious system of the Neo-Eneolithic communities.

The most popular theory, although contested by archaeologists, is that of Marija Gimbutas. She interpreted the female figurines as representations or hypostases of the “Great Goddess”, and considered them to be expressions of the matriarchal societies characteristic of the “Old Europe”. Apart from those, the male figurines would comprise only 3-5% of the Neolithic sculptures and would represent the acolyte character or the partner of the female divinity. Unfortunately, this interpretation does not include the differences between the Neolithic statuettes and does not take into consideration the large number of representations without any feminine or masculine attributes. Furthermore, it does not square with the social and historical facts of the Neo-Eneolithic Age.

According to other interpretations, the female figurines could be symbols of fertility, which are essential to an agricultural society such as the Neolithic one. Representing supernatural beings or deities, these figurines could have been used in mythical rituals or played a part in initiation rites or “passage rites”. The statuettes could also have been symbolic guardians (having a protective role), and thus used to ensure the health of their owners, to ease the confinement, etc. Both men and women could have worn them as talismans. Also, the figurines could have been magical objects used to cause, prevent or change a certain situation or state of facts.

Apart from their magical and religious meanings, the figurines were also given a social interpretation. According to Svent Hansen, the emergence of figurative sculpture corresponds to some complex social structures, which are characteristic of a certain type of society. He also noticed that in the Near East and South-East Europe, the use of figurines is linked to sedentary populations that have permanent, well inhabited settlements. Douglass W. Bailey believes figurines would represent markers of personality that are used to separate the feminine and masculine spheres. Along the same line of thought, some authors consider that figurines expressed social differences between individuals and groups, and that they were used as exchange items in order to mark various types of social relations (matrimonial and economic ones, alliances, etc.), both within the same settlement, and between different settlements. Therefore, one could explain the fragmentary state of most statuettes, i.e. they were deliberately broken and the fragments given out to individuals or groups so as to strengthen the relationship between them. This

interpretation comes to support the one according to which the statuettes were ritually broken after performing the ceremony or magical action for which they were used.

Recently, researchers have turned to other directions in interpreting the significance of plastic representations. D. W. Bailey approaches the functionality of figurines from the perspective of the visual culture and tries to decipher their importance and effect on the viewers. In his opinion, the attraction of the figurines comes precisely from their three-dimensional shape, which has the power to take people out from their world and transpose them into a world of faith.

Starting from their variety of types, one could support the idea that statuettes performed various and complementary functions. Some of them could have been just toys, while others might have played a more important role, being markers of identity, idols or even parts of a well-defined religious system, such as that suggested by J. Cauvin.

Zoomorphic figurines are less frequent than the anthropomorphic ones. These have been modelled either in a realistic manner, i.e. the animal represented can be easily identified, or in a stylised one, without representing any particular species. The meaning assigned to zoomorphic representations is generally related to their use in magical practices, since many of the zoomorphic figurines are considered to be amulets. As we have mentioned above, the representation of bovines (the bull), either totally or partially (the bucrania), are often linked to the masculine principle. Apart from bovines, other animals identified in the Neo-

Eneolithic plastic art are dogs, wild boars, pigs, sometimes also bears, foxes, frogs, etc., and only rarely birds.

Eszter Bánffy, a Hungarian researcher, has pointed out the methodological mistake related to a separate study and different interpretation of zoomorphic and anthropomorphic representations. She has also stressed the fact that there are some mixed or composite representations, which have both human and animal features.

The plastic representations presented in this catalogue belong to Vinča, Foeni and Petrești culture. Hundreds of figurines, most of them female ones, have been discovered in the spreading area of the Vinča culture. Generally, the figurines are stylised and they comply with a series of standards, thus allowing the researchers to assign them to one category or another. The figurines with triangular masks (or pentagonal masks for the late phases of the culture) represent a category specific to the Vinča culture. It is worth mentioning that some figurines, such as the one discovered at Liubcova – Ornița (Caraș-Severin County), do not have the mask on their face, but in their hand or under the arm. In the settlements inhabited by Vinča communities, together with female representations, there have also been discovered two-headed and couple figurines, as well as some male figurines. A number of statuettes are decorated with angular, spiral or meander incisions. Prosopomorphic lids (lids with human face) and the vessels with applied anthropomorphic or zoomorphic figures are also characteristic of this culture. There have also been found zoomorphic vessels, as well as small zoomorphic altars.

Although there have been discovered only a few figurative representations belonging to the Foeni group, researchers were able to identify certain standards coming from a late Vinča tradition (Vinča C). Most figurines, both the anthropomorphic and the zoomorphic ones, are made in a very stylised and abstract manner. The archaeologist Florin Drașovean believes that the Foeni communities have subsequently transmitted certain rules concerning the modelling and shape of the statuettes are subsequently transmitted to Petrești communities, as part of a complex evolutionary process.

Unlike for other Neolithic and Eneolithic populations, it seems that the clay figurative representations did not have the same importance for the Petrești communities. For instance, less than 40 anthropomorphic statuettes have been discovered so far in the distribution area of this culture. Due to their low number, as well as to their fragmentary state, researchers were not able to systematically classify them. However, we may state that the figurines were schematically and geometrically modelled; all of them were in a standing position and sometimes had certain body parts decorated with incised lines. Apart from the anthropomorphic figurines (both male and female ones), Petrești communities have made zoomorphic statuettes as well, which were very stylised too. Even though for most zoomorphic representations, the animal species cannot be accurately identified, some of the figurines depict horned animals or porcines. Stylised bird heads (protomes) would sometimes decorate the lids and handles of vessels. (P.M.)

Note: For the illustrations, C. Florescu described the Vinča artefacts (1-10) and M. Gligor the Foeni and Petrești statuettes (11-14).

1. Anthropomorphic figurine

Limba - "Şesu Orzii", Alba

Middle Neolithic, Vinča culture, phase A

cca. 5500 - 5200 BC

Cylindrical figurine with the eyes represented by two short deep horizontal incisions starting from the base of the nose, which is made of a round prominence; the head is not separated from the rest of the body; the base is oval; the ears or arms were attached to the body, but they have not been preserved; there is no sign of any female anatomic features; the surface is well smoothed and there are traces of red slip (probably applied after firing); sand and traces of chaff as temper; oxidizing firing.

H 8.3 cm

UAB - IAS, 2829

Unpublished



2. Anthropomorphic figurine

Limba - "Şesu Orzii", Alba

Middle Neolithic, Vinča culture, phase A

cca. 5500 - 5200 BC

Cylindrical figurine with round mask pointing up; the eyes are represented by wide incisions, and the nose by a prominence; the neck cannot be differentiated by the rest of the body; the base is flat, round and widened; the arms, breasts and buttocks are not indicated on the body; the surface is well smoothed; large-grained sand as temper; oxidizing firing.

H 5 cm

UAB - IAS, 2832

Unpublished



plastic art

5500 - 4200 BC



3. Anthropomorphic figurine

Limba - "Bordane", Alba

Middle Neolithic, Vinča culture, phase A

cca. 5500 - 5200 BC

Figurine with triangular mask; the eyes are represented by L-shaped incisions, and the nose by a prominence; the arms are made of short conical prominences pointing to the side; the base is circular and widened; there are no female anatomical features; the surface is well smoothed; sand and traces of chaff as temper; mixed firing.

H 5.5 cm

UAB - IAS, 2830

Unpublished



4. Anthropomorphic figurine

Limba-"Bordane", Alba

Middle Neolithic, Vinča culture, phase B

cca. 5200 - 4900 BC

Figurine with pentagonal mask; the eyes are represented by two small and deep holes; the ears were attached, but only the left ear (which is also perforated) has been preserved; the chin is prominent and we can notice a pinprick; the neck respects the proportions of human anatomy; slip was applied over the smoothed surface, and then burnished; fine sand as temper; oxidizing firing.

H 6.7 cm

UAB - IAS, 2831

Unpublished

5. Plastic representation

Alba Iulia - "Lumea Nouă", Alba

Middle Neolithic, Vinča culture, phase B
cca. 5200 - 4900 BC

Quadrilateral (slightly trapezoidal) representation; it has four small legs obliquely placed on the sides of the base to ensure its stability; the edges are rounded; both sides are decorated with seven rows of zigzag lines; the surface is well smoothed; fine sand as temper; oxidizing firing; fine ware; cultic purpose.

H 10 cm
UAB - IAS, 2481
Unpublished



6. Zoomorphic vessel

Alba Iulia - "Lumea Nouă", Alba

Middle Neolithic, Vinča culture, phase B
cca. 5200 - 4900 BC

Zoomorphic vessel representing a turtle; it has a circular opening and a quadrilateral shape at the base, where there are four legs; a wide and slightly curved prominence with a pointed end, applied on the middle part of the vessel, represents the head; the decoration consists of oblique incised lines indicating the ribs on the shell; burnished surface; fine sand as temper; mixed firing; fine ware.

H 11.5 cm, Drim 15 cm
UAB - IAS, 2838
Unpublished



plastic art

5500 - 4200 BC



7. Pot lid with anthropomorphic representation

Limba - "Vărărie", Alba

Middle Neolithic, Vinča culture, phase B

cca. 5200 - 4900 BC

Anthropomorphic representation with eyes made of wide, deep and slightly curved incised lines; the nose is made of an elongated prominence that is thicker towards the base (near the arches); it has a vertical perforation on the top head, while a second one could be observed where the lid is broken; a part of the vessel's decoration is preserved on the left side of the face – it consists of incised lines and dots; smoothed surface; fine sand as temper; oxidizing firing.

UAB - IAS, 2837

Unpublished



8. Antropomorphic representation

Limba - "Șesu Orzii", Alba

Middle Neolithic, Vinča culture, phase B

cca. 5200 - 4900 BC

Schematised anthropomorphic representation on a coarse vessel; the arms and legs are separated, while the head is made by stretching the paste from the rim; there are no female anatomical features; smoothed surface; large-grained sand as temper; mixed firing.

H 8.7 cm

UAB - IAS, 2836

Unpublished

Deva - "Tăualaș", Hunedoara

Middle Neolithic, Vinča culture, phase B2/C
cca. 5000 - 4800 BC

9. Representation of a human foot

Human foot (probably the right one) coming from a statuette or anthropomorphic vessel; it has straight sole, slightly rounded heel, and toes marked by four deep incisions; surface covered with burnished slip; fine sand as temper; oxidizing firing; fine ware.

H 4.5 cm

UAB - IAS, 2834;

Dumitrescu, Lazarovici 1986



10. Representation of a human foot

Human foot (probably the left one) coming from a statuette or anthropomorphic vessel; it has straight sole, slightly rounded heel, and toes marked by four thin incisions; the surface has traces of burnishing; fine sand as temper; oxidizing firing; fine ware.

H 3.5 cm

UAB - IAS, 2835;

Dumitrescu, Lazarovici 1986



plastic art

5500 - 4200 BC



11. Anthropomorphic statuette

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni group

cca. 4800 - 4500 BC

Female anthropomorphic statuette with the arms stretched; the legs are simplified – there is only one cylindrical limb; the breasts are clearly modelled; it has a cylindrical head, a prominent nose and the eyes are made by a horizontal perforation; the statuette might have been used as an amulet that could be worn around the neck (by using the orifices of the eyes); dense and homogeneous paste; burnished; fine sand as temper; oxidizing firing; fine ware; modelled according to the standards of Vinča C1 plastic art.

H 4.3 cm

UAB - IAS, 2486

Unpublished



12. Anthropomorphic statuette

Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni group

cca. 4800 - 4500 BC

Anthropomorphic statuette with indefinite sex (only the head has been preserved); it has prominent perforated ears, a large nose, eyes made of two incised dots, and the mouth made of a short horizontal incision; the top head has the shape of a crest; it might have been used as an amulet; dense and homogeneous paste; fine sand as temper; oxidizing firing; fine ware; modelled according to the standards of Vinča C1 plastic art.

H 3.3 cm

UAB - IAS, 2487

Unpublished

13. Anthropomorphic statuette Alba Iulia - "Lumea Nouă", Alba

Late Neolithic/Early Eneolithic, Foeni group
cca. 4800 - 4500 BC

Anthropomorphic statuette with detachable head (only the body has been preserved); the body is trapezoidal (with an ellipsoidal section) and vertically perforated (from top to bottom); the perforation was used to fix the head; the arms are raised obliquely; homogeneous paste; fine sand as temper; mixed firing; possibly Vinča C1 import.

H 4.5 cm
UAB - IAS, 2485
Unpublished



14. Anthropomorphic statuette Alba Iulia - "Lumea Nouă", Alba

Middle Eneolithic, Petrești culture, phase A-B
cca. 4400 - 4200 BC

Fragmentary male anthropomorphic statuette with prominent shoulders and the bust narrowing towards the waist; the legs are simplified – there is only one cylindrical limb; dense and homogeneous paste (slightly porous); fine and normal sand as temper; oxidizing firing.

H 6.1 cm
UAB - IAS, 1158
Gligor 2003



plastic art

5500 - 4200 BC

clay weights

5500 - 4800 BC

Starting from Neolithic times, people have used clay not only to manufacture vessels, but other objects as well, i.e. either household items or different objects for various activities outside the settlement. These kinds of artefacts were discovered in all settlements inhabited by Neolithic communities, the most common ones being the spindle whorls and the weights.

Spindle whorl – a small, perforated disc of stone or pottery which acts as a fly-wheel, maintaining the momentum of a spindle rotated by the spinner while he or she teases more fibres out of a fleece. The first spindle whorls appeared in Neolithic times, but they continued to be used until the Middle Ages.

The function of the weights is generally related to weaving (loom weights) and fishing (fishing weights). Together with the spindle whorls and bone needles, loom weights in some way prove that textile fibre processing was a household occupation. How did cloth, twining, and especially people's clothes look in the Neolithic Age? What kind of fibres (animal or vegetal ones) and what techniques were used to produce them? These are only some of the questions that concern the specialists who study the textile fibre processing in prehistory. The answers are not always easy to find, especially due to the fact that the end products (clothes, cloth, twining) have not been preserved, except for special cases (in extremely dry or humid environments), since they were made of perishable materials. In some instances, textile impressions were preserved on a number of vessels. They were either accidental ones, or purposely made in order to decorate the vessels. These

impressions are often a starting point for the experimental reconstruction of the original products.

Therefore, the weights are used to reconstruct experimentally possible types of Neolithic looms. Researchers are almost certain that the looms were vertical ones. Their most rudimentary types consisted of a vertical stand supporting a horizontal roll, to which the warp threads (stretched with the help of the weights) were attached. The weft threads were passed through the warp threads, thus weaving the cloth. According to some opinions, the weights were used to ensure the mobility of the threads and therefore the technique employed was more similar to twining than to weaving. Hence, on the threads stretched with the help of weights one could weave cloth or twine fishing nets.

Some of the weights discovered in Neolithic settlements are considered to be fishing weights. It is thought that even from the Mesolithic period, before the clay weights were produced, people used stone weights for some of their fishing nets. Fishing weights are generally spherical or disc-shaped and they are perforated horizontally. Thus, they differ from the loom weights, which are perforated in the upper side, and are generally in the shape of a prism or a truncated cone, although they might also be spherical, ellipsoidal or disc-shaped. A number of weights may have had a double function (the same type could be used both as loom weights, and as fishing weights), but they might also have had functions that are still unknown to us. (P.M.)

1. Weight

Limba - "Vărăria", Alba

Middle Neolithic, Vinča culture,
phase A, cca. 5500 - 5200 BC

Approximately ellipsoidal clay weight perforated transversely; one side is decorated with pairs of V-shaped incisions that are symmetrically placed on both sides of the perforation; smoothed surface; fine sand as temper; oxidizing firing; medium fine ware; integrally preserved.

Dmax 7.7 cm; Th 4.5 cm
UAB - IAS, 2846
Unpublished

2. Weight

Disc-shaped clay weight perforated on the middle part; decorated with incised lines; sand as temper; mixed firing; medium fine ware; preserved in a fragmentary state.

Dmax 9.7 cm; Th 3.4 cm
UAB - IAS, 2847
Unpublished

3. Weight

Alba Iulia - "Lumea Nouă", Alba

Middle Neolithic, Vinča culture,
phase B, cca. 5200 - 4900 BC

Disc-shaped clay weight perforated transversely; decorated with radial incised lines; smoothed surface; sand and limestone grains as temper; reducing firing; medium fine ware; preserved in a fragmentary state.

Dmax 8.5 cm; Th 4.1 cm
UAB - IAS, 2852
Unpublished

4. Weight

Limba - "Bordane", Alba

Middle Neolithic, Vinča culture
phase B, cca. 5200 - 4900 BC

Approximately ellipsoidal clay weight perforated on the middle part; decorated with circular impressions placed around the central perforation; smoothed surface; large-grained sand as temper; mixed firing; medium fine ware; integrally preserved.

Dmax 8.5 cm; Th 5 cm
UAB - IAS, 2851
Unpublished



5. Weight

Deva - "Tăualaș", Hunedoara

Middle Neolithic, Vinča culture, phase B2/C
cca. 5000 - 4800 BC

Approximately triangular clay weight
perforated transversely on the upper part;
smoothed surface; vegetable material and
limestone grains as temper; oxidizing firing;
medium fine ware; integrally preserved.

H 12.5 cm; Th 9.3 cm
UAB - IAS, 2848
Unpublished

6. Weight

Conical clay weight perforated transversely
on the upper part; smoothed surface; sand and
limestone grains as temper; oxidizing firing;
medium fine ware; integrally preserved.

H 7.2 cm; Dmax 5.4 cm
UAB -IAS, 2849
Unpublished

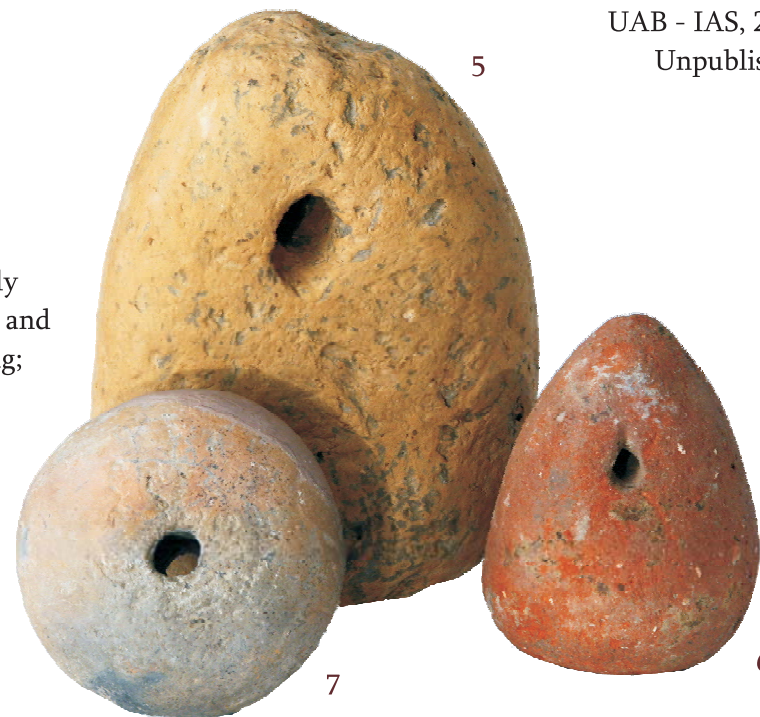
7. Weight

Limba - "Șesu Orzii", Alba

Middle Neolithic, Vinča culture, phase B
cca. 5200 - 4900 BC

Ellipsoidal clay weight perforated on the
middle part; smoothed surface; sand as
temper; mixed firing; medium fine ware;
preserved in a fragmentary state.

Dmax 6.4 cm; Th 4.5 cm
UAB - IAS, 2844
Unpublished



clay weights

5500 - 4800 BC

A history lesson

general data on Neolithic,
manufacturing techniques and
analysis methods for ancient pottery

What does Neolithic mean?

The Neolithic (or Polished Stone Age), as a period in the history of mankind, is preceded by Palaeolithic and Mesolithic, and followed by the Bronze Age. Chronologically, this period is dated to approximately the second half of the 7th millennium and the first half of the 3rd millennium BC.

The historical phenomenon of neolithisation could be mainly defined by a change in the economy of human communities, which led to the appearance of sedentary life, and the invention of pottery and polished stone tools.

The gradual change from a food strategy based only on gathering resources from the natural environment to a more varied one, where agriculture and animal domestication allowed people to depend less on the surrounding nature, happened in different places in the world. According to specialists, Near East seems to have played the main role, and the beginning of this phenomenon dates back to approximately 9000 BC.

Through both migrations and cultural diffusion, Neolithic traditions then spread across Europe. The neolithisation of the continent was gradually followed by important social and economic changes. When they turned to agriculture, animal breeding and sedentary life, people created a kind of rural communities. Consequently, the settlements extended, while dwellings became more durable and increased in size.

Another advantage of practicing agriculture was the excess of products, which could be preserved or traded with other communities.

Neolithic population created a series of tools necessary for agriculture and improved fishing and hunting techniques. One of the most important technological developments (especially for cooking and preserving food) was the appearance of pottery (vessels).

The constant technical progress, as well as a diversification and specialisation of activities, resulted in an increased productivity, thus supporting the demographic growth. The development of these societies led to the invention of copper metallurgy, therefore explaining the use of the term “Eneolithic” or “Chalcolithic” civilizations. Etymologically, the word Eneolithic comes from the Latin word *aeneus*=copper, while the word Chalcolithic comes from the Greek word *chalkos*=copper. The beginning of the Eneolithic period is considered to be in the first half of the 5th millennium BC.

As a matter of fact, the Chalcolithic period was primarily characterized by a marked social difference, which was especially noticeable at graves containing a rich inventory and artefacts indicating the social status, in the way of building fortifications for important settlements, and in the emergence of sanctuaries.

The spiritual life of Neolithic communities is related to the fertility and fecundity cult, illustrated by the artistic patterns used to decorate pottery, as well as by the anthropomorphic and zoomorphic plastic art, which are seen as a “revolution of symbols”.

The common funerary ritual for this period was inhumation, while cremation was used only to a lesser extent. (M.G.)

Elements of chronology

In an attempt to date the prehistoric periods, archaeologists use both the relative and absolute chronology.

The relative chronology (contact chronology) establishes synchronisms between different discoveries that, later on, could be related to the chronology based on the discoveries made in the Aegean and Anatolian regions, as well as on the written documents from Egypt and Mesopotamia.

In order to establish the relative chronology, archaeologists use stratigraphic, typological, comparative, and chronological (cartographic) methods.

The absolute chronology is the result of a range of techniques and methods of the exact sciences. Scientists use different absolute dating methods, but for Neolithic the most common are radiocarbon (C14) dating and dendrochronology.

In the last decades, the radiocarbon chronology has continuously been improved by calibration, and therefore the data obtained have become more accurate and widely used in archaeological research. However, there are cases when comparative stratigraphy does not correspond to the C14 dating. (M.G.)

What does „archaeological culture” mean?

The term “archaeological culture” came into use at the beginning of the 20th century, and it resulted from the need to differentiate between various human communities that lived in prehistoric times and therefore, because there were no written sources, could not be identified ethnically or linguistically. It is assumed that a community who occupied a certain territory during a certain period of time created a common assemblage of material goods, religious beliefs and spiritual representations. Thus, archaeological culture means a unitary ethnic structure, well defined in time and space, and which comprises a series of characteristic features, such as the type of habitat, the material culture (vessel shapes, decoration patterns and techniques, manufacturing methods and types of artefacts made of stone, bone, horn, metal, etc.), the funerary rites, the spiritual culture, the social and economic structures.

An artefact is any object that has been modified, fashioned, or manufactured according to a set of humanly imposed attributes, including tools, weapons, ornaments, utensils, houses, buildings, etc. Artefacts are the basic components of material culture. During archaeological excavations, biofacts or ecofacts are also found together with the artefacts. Ecofacts are materials recovered from archaeological sites, or other sealed deposits, which are relevant to the study of ancient environments and ecology because they also have an archaeological and cultural significance. Examples include animal bones, seeds, shells, pollen, etc.

The name of an archaeological culture is generally given by the place or settlement where its characteristic features have been discovered for the first time.

As knowledge in the field of archaeology has become more and more comprehensive, the definition of the

term “archaeological culture” has become less clear and also the subject of some debates. It is known that archaeological discoveries are actually only fragments of the products of past societies. On the one hand, manifestations such as thoughts, feelings, beliefs, myths, language, music, dance, etc. leave no traces, or are only indirectly reflected by certain artefacts. On the other hand, many categories of artefacts have disappeared because they were made of perishable materials, reused or deliberately destroyed. That is why the term “archaeological culture” is an “artificial reality”, which only partially represents the real culture of a past community.

Researchers have proved that ethnic identity is relational, i.e. it is the result of social interactions and interests of various groups or communities. From this point of view, the definition of archaeological culture is a rigid one. Populations that are ethnically and linguistically identical may develop into several cultures or cultural groups, while populations of different origins may represent a single culture. Following the same line of thought, similar artefacts do not necessarily correspond to a single society, while different artefacts do not necessarily indicate different societies. Some archaeologists have tried to demonstrate that certain so-called distinct cultures are in fact aspects of the same culture, having only local differences mainly caused by environmental factors.

The spread of the material or non-material culture from one human group to another (through imitation, exchange, migration, etc.) is known as **diffusion**. The diffusion that takes place over a large area and during a

relatively short period of time is called **horizon**.

Besides the term “archaeological culture”, archaeologists also employ the terms “cultural group”, “cultural facies”, and “cultural complex”. To explain these terms, we have used the definitions given by Marian Gumă.

A **cultural group** is an archaeological and ethnic entity that has common material and spiritual features but which, due to an early stage of research, does not have all the defining and component elements of a culture. Depending on the progress of the research, the materials of a cultural group may either form the basis for defining an archaeological culture, or remain a simple cultural group (within an archaeological culture) with certain characteristic features.

A **cultural facies** is a component part of an archaeological culture, namely a restricted set of historical and archaeological manifestations, which are individualized by a number of particular material or spiritual features that, at a certain moment, existed in a limited area of that archaeological culture.

A **cultural complex** is a combination of related ethno-archaeological cultures, groups and facies; it is characterized by a series of common material and spiritual features diffused across areas which surpassed that of a single archaeological culture. (P.M.)

When was pottery invented?

It is difficult to state precisely when the manufacture of ceramics was discovered. The earliest thoroughly artificial objects made of burnt clay were small figurines found at Dolní Věstonice (Czech Republic) in a Gravettian (Upper Palaeolithic) site, dating back to around 30 000 B.C. However, it seems to have taken thousands of years more for ceramics to become common in prehistory. A continuous pottery making tradition occurred approximately 12 000 years ago in the Far East (Japan and the southern part of China) and independently around 9 000 years ago in western Asia (Turkey, Iran, Iraq, Syria and Palestine). It is generally believed that from these last regions the pottery spread out to Europe with the first Neolithic farmers.

Why was pottery important?

The invention of ceramics was one of the most innovative technologies of the human beings. The well-known archaeologist V. Gordon Childe noted that, “pot-making is perhaps the earliest conscious utilization by man of a chemical change.”

The manufacture of pottery was likely to have had an effect on human life. Pottery facilitated the production of high quality food and, as a result, the nutrition of individuals was dramatically improved.

The clay vessels were also important for the storage and transportation of food. The pottery artefacts seemed to have a great symbolic potential as prestige goods used in ritual displays, and they supported the social interaction as items for trades and offerings. As a fire craft the pottery production opened the humans' way to discover other important technologies such as metalworking or metallurgy.

How was pottery made?

Clay preparation

Clay extraction

In order to make durable pottery, potters had to find good quality clay. Once the clay source was identified, the clay had to be extracted. It is known that there are clay deposits in the ground, at different depths, and that is why potters had to dig pits or even galleries (sometimes in the shape of an upside down “T”) in order to extract the clay.

Paste preparation

Clay was then taken to the settlement, where it was cleaned of impurities, such as fragments of roots and gravel. Afterwards it was mixed with water, kneaded and beaten until it had the consistency of a paste.

Prehistoric potters found that vessels made of a clay paste that was too greasy, too fine and too plastic would break during drying, or even explode during firing. Therefore, when preparing the paste, potters would mix the clay not only with water, but also with tempers.

The temper is a non-plastic material intentionally added to the paste in order to “open” the clay during drying and firing and to allow the water to evaporate from the clay without causing the vessels to crack or break. Almost any organic or inorganic substance could be used, provided that it did not become plastic once mixed with water. Sand was the most commonly used material. Other inorganic materials were ash (used nowadays by potters from Obârșă, Hunedoara County, or by those from Gorj County), limestone grains, mica, and broken sherds. The organic materials used were chaff, straw, smashed shells and bones, and wood sawdust.

Each prehistoric community preserved the tradition of using certain materials as tempers. Therefore, it is very important for archaeologists to study the composition of the ceramic paste. Thus, they are able to provide a cultural and chronological framing of the pottery fragments that have no decoration or other distinctive features.

Shaping techniques for ceramic vessels

In prehistoric times, as well as nowadays, people have used various techniques for manufacturing ceramic vessels.

Hand modelling

Hand modelling implied making a hollow in a clay ball (using the thumbs) and then shaping the walls by gradually thinning them down and rotating the vessel in the hands. A skilful potter was able to create simple but regular shapes, with a curved or slightly conical bottom, without using any tools or support devices.

Although the technique was frequently used, one disadvantage was that it was not appropriate for manufacturing large vessels.

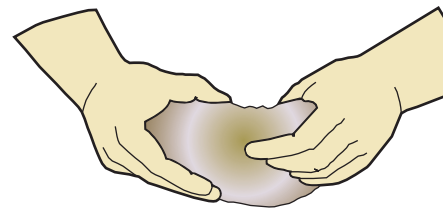


Fig. 1: Hand modelling of a clay ball

Beating (paddle and anvil) manufacturing

This technique consisted of making a hollow in a large clay ball followed by shaping the walls by beating the exterior surface of the vessel with a paddle, while a pebble (anvil) was held on the interior. If the paste was well prepared, this method would allow for thin and durable walls. The vessels obtained usually had a hemispherical shape.



Fig. 2 : Building the walls of a vessel using the beating technique

Pressing/moulding manufacturing

This was an ancient technique based on the plasticity of the clay paste and its characteristic that allowed it to be moulded in the desired shape. In prehistory there were two methods for moulding manufacturing:

a. concave moulding

This method consisted of preparing a circular sheet of soft and well-tempered clay and then pressing it on a hemispherical mould (a vessel, a basket or even a hollow

in the ground). By pressing the clay sheet on a basket, the potters obtained the decoration as well (the texture of the basket was impressed on the walls).



Fig 3: Concave moulding technique

b. convex moulding

The thin clay sheet was applied on a spherical or hemispherical shape, usually the bottom of another vessel or even a large stone.

Only the lower part of the vessel can be obtained by moulding techniques, while the upper part can be shaped by beating or coiling.



Fig. 4: Convex moulding technique

Coil construction

It is the most commonly used technique in prehistory. The vessel was built by successively adding clay coils obtained by rolling the paste with the hands. The walls were made by building up the coils, either in the shape of a spiral, or as successive circles. The bottom of the vessel has already been modelled of a clay bowl or by using the

moulding technique. In order to shape the coils, the potter needs a rotating device (on which the vessels were placed) since he needed both hands for this action. One hand was placed inside the vessel, supporting the wall, while the other was used to ensure the adherence of the coils by smoothing over the joints.

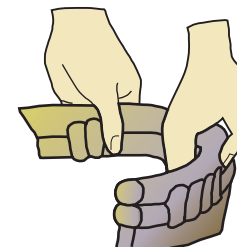


Fig. 5: Coil construction technique

Rotating devices

Several types of rotating devices were used in prehistory. Starting from very simple prototypes, potters created more complex ones, eventually discovering the fast wheel or potter's wheel, which is still used nowadays.

Researchers defined four different types in the development of rotating devices:

a. unpivoted turntable - a clay saucer or a wooden disc on which the vessel was placed and which could be turned. It is the simplest and oldest rotating device and it has been used even since Neolithic times.

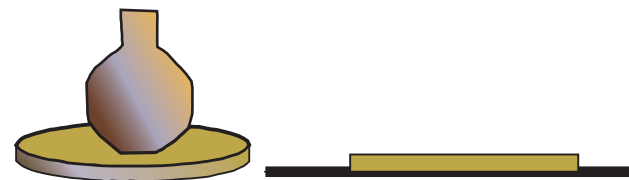


Fig. 6: Unpivoted turntable

b. pivoted turntable - a disc, usually of wood, with a socket on the underside that is balanced on a fixed boss or pivot, and thus rotating easily. Specialists believe that this type of device was used by some potters even from Neolithic and Eneolithic times.

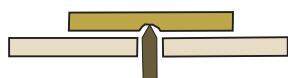


Fig. 7: Pivoted turntable (apud Ellis 1984)

c. simple wheel - a disc that is well fixed on a central axle. It differs from the pivoted turntable due to its size and variety of forms. The disc or the wheel is sufficiently large and heavy as to allow sufficient momentum after the application of force. Although it is likely that this type of wheel was known even earlier, its usage was attested only in the 4th millennium BC, in the southern part of Mesopotamia.

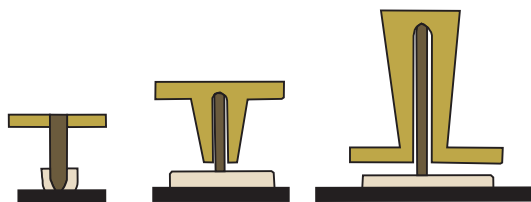


Fig 8: Models of simple wheels (apud Ellis 1984)

d. double (fast) wheel - two horizontal discs (usually made of wood) joined by a vertical axle. The lower disc is larger and when rotated (kicked), it sets in motion the upper disc, which is smaller. This type of wheel was invented only much later. Although some variants were known since the Roman Period, it wasn't widely used until the Middle Ages.



Fig. 9: Double wheel or „potter's wheel” (apud Ellis 1984)

Surface treatment

Different treatments and decorative patterns were applied on the dry or wet surface of the vessels, after they had been modelled.

By surface treatment, specialists mean the processing of the walls, such as smoothing, burnishing, and slip application. However, decoration techniques could also be considered as surface treatments.

The slip or engobe is a thin opaque layer, usually having a different colour and composition than the vessels, and which covers the surface of the vessel as a result of its immersion in a suspension of fine clay and water. The slip has both an aesthetic role, and a practical one, since it makes the walls water-resistant and provides the background for the painted decoration.

Most Neolithic and Eneolithic vessels were burnished. Just as for the slip application, burnishing had an aesthetic role (some vessels are extremely beautiful due to their metallic lustre), as well as a practical one (the clay pores were flattened, thus reducing the porosity of the vessels).

Decoration

The decoration of prehistoric pottery shows the care of prehistoric people for beauty, as well as their exceptional originality and artistic feeling. The methods of decoration were different for each prehistoric community. Thus, the study of pottery decoration and ceramic shapes helps archaeologists identify and differentiate prehistoric cultures (material cultures created by prehistoric people), as well as provide a spatial and time framing for them or establish the relationships between them.

There are many decoration techniques that ancient people used in order to decorate their pottery. Although some prehistoric communities showed a preference for certain types of decoration, several techniques were usually employed. Sometimes, several decoration

methods were used on the same vessel.

We may assume that the decorative patterns used for pottery were also applied on other categories of objects, which were not preserved over time (clothes, jewels, different wooden objects, etc.). Moreover, we may also presume that similar patterns were used to decorate the walls of dwellings and sanctuaries.

Archaeologists believe that some decorative patterns represented signs or symbols having a very precise meaning, but that meaning was lost in time.

Decoration techniques

Incision (Incising)

Action	Cutting continuous lines in the soft clay paste
Tool	The pointed end of sharp instruments made of wood or bone
Outcome	Shallow grooves/lines in the shape of the letter “V”



Fig. 10. Pottery sherd decorated with bands of incised lines filled with pinpricks

Excision (Excising)

Action	Cutting out strips or shapes from the vessel walls while the paste is still soft
Tool	Sharp (pointed ends) and flat (spatulas) instruments made of wood or bone
Outcome	Lines or strokes cut in the clay alternating with parts in relief (not

excised), thus creating a double decoration that looks like embroidery



Fig. 11. Pottery sherd decorated by excision

Grooving

Action	Lines/Grooves made in the soft clay paste by light pressure, followed by burnishing
Tool	Flat instruments made of bone or wood, having a rectangular or slightly curved (spatulas) shape; stones with even surface (to give a lustrous appearance)
Outcome	Grooves in the shape of the letter “U”, alternating with ornaments in relief, disposed horizontally, vertically, obliquely, circularly, spirally, angularly, etc.



Fig. 12. Pottery sherd decorated with wide grooves and a vertically perforated knob

Pleats

Name given by specialists to very fine grooves.



Fig. 13. Pottery sherd decorated with pleats

Impression (Stamping)

Action	Pressing in the soft clay paste of the vessel
Tool	Fingernails, thumbnails, shells, combs,

cord, textile cloth, small brooms, different patterns (circular or angular objects)

Outcome Imprint that preserves the shape of the tool used for pressing



Fig. 14. Pottery sherd decorated with small impressions

Pinpricks (Punctures) Name given to circular or ovoid holes made by pressing a stone or wooden pointed end, thus making pinpricks (impressed dots) in the soft paste of the vessel by vertical or oblique movements

Painting

Action Applying liquid coloured substances (black, white, red) resulted from mineral or vegetable colorants on the surface of the vessel

Tool Fingers, brushes of different sizes

Outcome Lines, dots or complex decorative patterns (angular, spiral, net, chess table, anthropomorphic, zoomorphic or vegetable motifs, etc.) painted on the background of the vessel using one, two or several colours (bichrome, trichrome or polychrome decoration).



Fig. 15. Pottery sherd with polychrome painting

Incrustation

Action Applying a white or red substance in the grooves or lines made in the soft clay paste by excision, incision or impression

Tool Flat instruments made of bone or wood, having a rectangular or slightly curved (spatulas) shape

Outcome The incised and excised decorations are filled up and strongly marked



Fig. 16. Pottery sherd decorated with incised lines filled with white paste

Relief decoration

Action Modelling and pushing the paste from the inside, or applying decorative elements on the wet surface of the vessel

Tool Hands, spatulas

Outcome Relief decorations of different shapes and sizes: knobs, prominences in the shape of lentil beans, "girdles", "cords", anthropomorphic or zoomorphic protomes, etc.



Fig. 17. Pottery sherd decorated with a plastic relief and pinches

Burnishing

Action Rubbing the walls of a partially dried, unfired pot, sometimes only on certain areas

Tool Stones with even surface (to give a lustrous appearance)

Outcome Lustrous surface or decorations obtained by flattening the clay pores



Fig. 18. Pottery sherd with burnished decoration (fine lines) on the interior of the vessel

Pinching

Action

Squeezing the soft clay paste

Tool

Thumb and index (fingernails)

Outcome

Prominences marked by two small holes left by the fingerprints



19. Pottery sherd decorated with pinches

Barbotine

Action

Applying semi-liquid clay on the vessel surface by immersion, pouring or sprinkling in order to obtain an even surface and reduce the porosity. Sometimes, decorative lines were made on the thin layer of soft clay.

Tool

Fingers

Outcome

Uneven surface ("unorganised" barbotine) or a surface with parallel, oblique or vertical lines ("organised" barbotine)



Fig. 20. Pottery sherd with barbotine decoration

Pottery Firing

Firing is the most important stage of pottery manufacturing. Through firing clay is transformed into pottery, thus acquiring the hardness of stone, and therefore the vessels obtained are much more resistant in time. A well fired vessel has a low porosity and consequently absorbs little water, which makes it perfectly adequate for storage, cooking and other household activities.

Before firing, vessels must be dried very well. A sudden drying may lead to fissures and cracks and that is why vessels must be dried during several days at a moderate temperature, without being directly exposed to sunlight. A certain percentage of humidity (3-5%) always remains between the clay particles of unfired vessels, no matter the period of drying, and it disappears only during the firing process. Clay is transformed into pottery at different temperatures depending on the type of mineral clay used, but generally at a temperature of about 550-600°C.

In the beginning, it is likely that the vessels were fired accidentally, but in time potters have created firing installations in order to control the fire. The aim was to obtain an even firing of the vessels at a high temperature, without causing them to break.

Types of Firing

Potters have learned even since prehistory that the colour of the vessels depends not only on the colour of the clay used for manufacturing or of the clay emulsions

used for the slip, but also on the firing conditions, provided those were well-known. Thus, vessels could be fired in oxidizing atmosphere or in reducing atmosphere.

Oxidizing firing implies the presence of a significant quantity of oxygen and the vessels have different shades of red depending on the firing intensity and the type of clay used.

Sometimes the walls of the vessels that were fired in an oxidizing atmosphere have a black core when they are broken, which proves that the temperature during firing was not high enough to completely penetrate the walls.



Fig.21. Examples of pottery fragments fired in an oxidizing atmosphere

Reducing firing is one during which a high quantity of carbon monoxide is produced. This penetrates the walls of the vessels causing the different shades of black, from grey to intense black. The reducing atmosphere was obtained by covering the openings of the kiln with sherds, clay, and even manure, as well as by using a smouldering fuel that produced a lot of smoke.



Fig.22. Examples of pottery fragments fired in a reducing atmosphere

Some vessels or pottery fragments show both firing types. Sometimes vessels were first fired in an oxidizing atmosphere and then the kiln was covered in order to create the reducing atmosphere and obtain the black colour of the vessels.

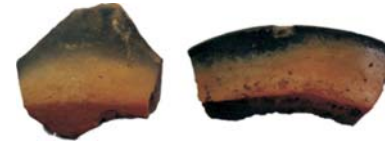


Fig.23. Examples of pottery fragments fired both in an oxidizing and in a reducing atmosphere

Firing Systems

In the course of time several methods were used for pottery firing:

a. open firing

This is the simplest and probably the oldest pottery firing method; nowadays it is still used by traditional communities of Africa and America. It does not imply any special firing installations. Fuel (straw, reed, branches, well dried wood, etc.) is piled up on the vessels that were placed directly on the ground or on another layer of fuel. The firing is fast, lasting between 30 and 60 minutes. The average temperature reached approximately 650°C, but there are cases when temperatures of up to 900°C were recorded. However, open firing has some disadvantages as well. When the firing temperature is lower than 500°C, vessels are incompletely and unevenly fired, having a black core when broken, and are highly porous and not very resistant in time. Firing depends on the environmental conditions and the temperature cannot be controlled; many vessels break because they come into contact with

fuel and flame.



b. pit firing

From a technological point of view, it is a method better than the open firing. Thus, the pit represents a first firing installation before the emergence of the pottery kiln. This technique is still used nowadays. Vessels are placed in the centre of a simple pit, directly on the ground or on a bed of rocks, sherds or light fuel; in order to gradually raise the temperature, fuel of different quality (different types of wood, branches, leaves and herbs) is placed around and on the vessels, while the fire is continuously fed by adding dry wood. The firing lasts approximately 2-3 hours and the maximum temperature reached is over 700°C. Pit firing does not completely depend on the environmental conditions and the firing atmosphere (oxidizing, reducing) can be more easily controlled. Therefore, vessels are evenly and better fired.

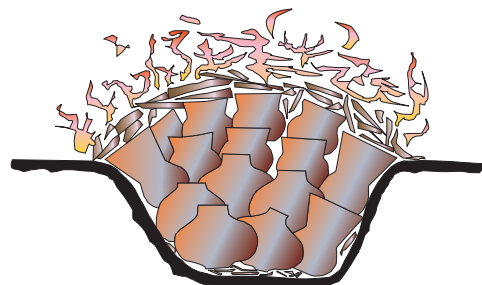


Fig.25. Pit firing

c. kiln firing

Kiln firing represents a significant technological progress comparing to the previous types of firing. By building the kiln, there is a proper firing installation. The main innovation is the fact that vessels are placed in a firing chamber, separated from the fire chamber. Thus, temperatures over 900°C can be reached and maintained inside the kiln, without causing the vessels to break since they do not come into direct contact with the fire. Therefore, firing errors are eliminated and vessels are completely and evenly fired. Kiln firing does not depend on the environmental conditions and the firing atmosphere (either oxidizing, or reducing) can be controlled. This type of firing takes more time (over 7 hours) and more fuel.

Types of kilns

There is a wide variety of kilns. The criteria used to classify them are the following: kiln shape, type of hearth, hearth position in relation to the ground, materials used for building the kiln, shape of the kiln base, number of fire openings, etc. For the two types of kilns described below, the criterion used is the position of the firing chamber for vessels in relation to the fire chamber.

a. horizontal kilns

These are kilns with a simple shape, which have developed from pits or clay structures where vessels and fuel were placed and burned in the same chamber. They are made of a firing chamber for vessels, usually in the shape of a truncated cone, which communicates with a smaller, tubular chamber where fuel is burned (the fire chamber).

There are several variants of this type of kiln: some were dug into the ground looking like a succession of pits, while others were made of clay or stone; some had only one fire chamber or one feeding opening, while others could have two or more; some were completely covered, while others had an uncovered charging opening.

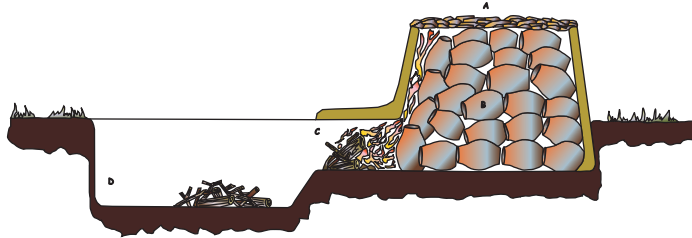


Fig. 26. Sketch presenting the components of a horizontal kiln, following the pattern of the kilns discovered at Cârcea, Starčevo-Criș culture (Neolithic) (apud Nica 1978): A. Charging opening (covered with pottery fragments); B. Firing chamber for vessels; C. Fire chamber; D. Access pit

b. vertical kilns

These are more complex and developed kilns, especially regarding the quality of the firing.

This type of kiln has a rectangular or cylindrical shape on a plane, while the chambers are displayed vertically: the fire chamber in the lower part, and the firing chamber for vessels in the upper part. The two parts are completely separated by a horizontal, perforated grate in order to allow the heat to rise to the vessel chamber. The grate is placed on a supporting wall or on pillars situated in the middle of the fire chamber, thus dividing it into two. Usually, the supporting wall was also perforated in order to allow for an equal distribution of heat in the two parts of the fire chamber and for an even firing.

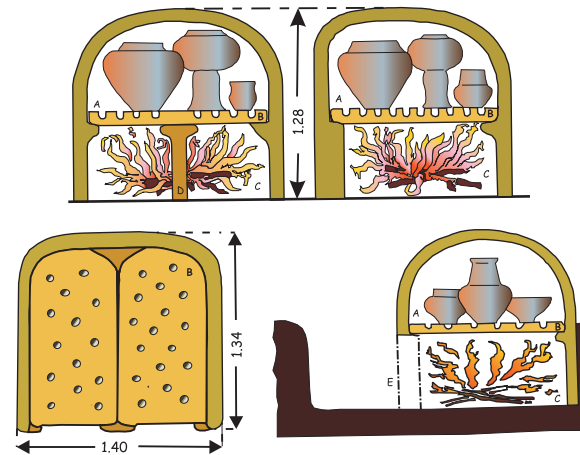


Fig. 27. Sketch presenting the components of a kiln discovered at Hăbășești (Iași county), Cucuteni culture (Eneolithic): A. Firing chamber; B. Grate; C. Fire chamber; D. Supporting pole for the grate; E. Feeding opening (apud Dumitrescu et al. 1954)

Once the firing is completed, the kiln, pit or stake was left to cool down, and only afterwards the vessels were taken out, ready to be used. Some surface treatments could have been applied after firing. The ethnoarchaeological study conducted by Facko Traore in Mantu village, Republic of Mali, Africa showed that in order to obtain the black colour, the incandescent vessels were immersed in a “vegetable” bath, which also gave them a metallic lustre.

Many of the secrets related to pottery manufacturing were revealed by comparative and experimental studies, as well as by complex and interdisciplinary analyses. The use of archaeometric analyses for a larger group of ancient pottery samples and the development of the investigation methods would allow the discovery of other new details concerning pottery manufacturing in prehistory. (P.M.)

Considerations on methods used for pottery analysis

Pottery studies are almost as old as archaeological studies. There has been written evidence showing the concern for prehistoric pottery even from the 15th century. However, starting from the 19th century, when the importance of archaeological techniques and the methodical and scientific approach to archaeological research developed, the importance of pottery (and other artefacts) has increased.

Pottery, which has been considered the “guiding fossil” of archaeology for a long time, is one of the most important sources of information for archaeological research due to the following reasons:

1. when fired at an appropriate temperature and for a certain period of time, clay becomes practically indestructible. Therefore, pottery fragments are the most common discoveries of archaeological research carried for all historical periods, starting from Neolithic.
2. before the emergence of the radiocarbon dating method and absolute chronologies, many relative chronologies were based on pottery types. Sometimes, a single pottery fragment was enough to date at least one phase of a site. By comparing the sequences from several settlements, as well as one or more similar pottery types, one could obtain a relative chronology for a long period of time.
3. the detailed study of decoration, style and material may be evidence for local or regional variants, and for

cultural groups. Microscopic analysis can also reveal a common manufacturing site which, together with the spatial distribution of identical pottery styles, may prove the existence of goods exchange between populations of different regions.

4. pottery shape and decoration are very important. The frequency, the place and combination of motifs, i.e. the decorative language of pottery, apart from their symbolic values, may also convey the cultural affiliation, or even the cultural status of an individual within the society.

Main stages of pottery analysis

Pottery analysis has developed as a specialized “branch” of archaeology, and it has standard definitions regarding paste preparation, manufacturing techniques, shape, etc.

Just like other artefacts, pottery items undergo several stages from the time of discovery to the time when they are analysed and published, or presented to the general public. During archaeological excavations, they are collected separately from other artefacts or ecofacts associated with them.

Pottery items with special functions, such as figurines, amulets, unusual vessel shapes, etc., are recorded and packed individually, unlike fragments of pottery vessels, which are collected and packed together, according to their discovery context.

Then, pottery items are washed and marked (after drying) with the name of the archaeological site, the year and the stratigraphic context of the discovery place. Afterwards, they are spread on tables and there is a

preliminary sorting, taking into account the shape, the part of the artefact that has been preserved, the color, the nature of the paste, as well as other characteristic features.

A specialist can identify the fragments belonging to the same vessel, because they match like in a puzzle. Some pottery vessels or items may be completely reconstructed, while others may be only partially reconstructed (using solely the fragments discovered). In order to actually reconstruct the vessels from the matching pieces, archaeologists turn to conservation and restoration specialists.

To reconstruct a prehistoric vessel entirely, there must be a complete profile of the vessel, i.e. a part that has both the base and the rim. Starting from this profile, specialists take a mould (the interior impression) using a plastic material, such as dental wax, plasticine, clay or silicon. This mould is successively moved on the vessel circumference, and a layer of plaster (having approximately the same thickness as the original wall) is applied on it.



Fig. 28. Work in the pottery restoration and conservation laboratory

The part made of plaster is then finished off and painted in a lighter shade of the original vessel colour. Thus, the reconstructed vessels are ready for display to the general public.

After the completion of these operations, the proper analysis of the pottery vessels or items is the next stage. The purpose of the analysis is to obtain as many details as possible about the people who manufactured and used those artefacts, but also to answer questions such as: which were their favourite shapes and decorative patterns; which idea led to the manufacturing of those artefacts and what techniques did they use; what was the function of those vessels and objects; how specialized was that community; what technological level did they reach regarding pottery firing; what kind of raw material did they use and from where did they take it; did they come into contact with other communities.

In order to find adequate answers in relation to the historical reality, pottery items must be studied taking into consideration the stratigraphic sequence of the discovery, and also the other associated materials. Moreover, they must be described in detail and in a standard manner. For each pottery fragment or artefact, several aspects must be taken into account: the part that has been preserved (rim, base, handle, etc. for vessels); the shape and function (cooking vessels, storage vessels, bowls, cups, etc.); the colour and firing type; the manufacturing technique; the nature of the paste; the type and size of temper; the decoration pattern (decoration type, colours used, decorative motifs), etc. All the information is then introduced in special databases, which allow interrogations, comparisons, and statistics for a large number of materials.

Depending on their characteristic features, pottery vessels and items can be classified and used by archaeologists to create typological series which, when complete, can be applied to all pottery fragments discovered in a certain site, and they could also be compared with similar series of different sites to determine whether there is a relationship between them.

“Type” means a homogeneous group of artefacts that have a significant number of common attributes (material, shape, size, colour, etc.), and which are different from other groups of artefacts defined according to the same criteria. Once the artefacts have been classified into types, archaeologists may study their time and spatial distribution, as well as the other related types. If there is a close relationship between two types, we may assume that one has developed from the other and thus start a typological series. The classification system that defines the types, taking into consideration the attributes of artefacts, is called typology.

Typological series are important not only to understand the evolution of a community or to decipher the contacts between communities, but also to establish the chronological relationship between those communities and their succession.

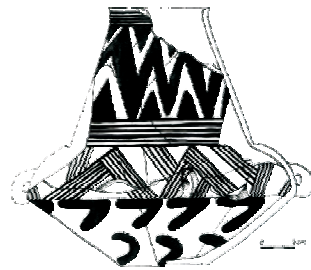


Fig. 29. The technical drawing of a ceramic vessel

The most representative pottery artefacts are drawn and photographed. Drawings, just like the description, must comply with a series of clearly defined rules. For instance, although vessels are in fact three-dimensional,

their shape is rendered as a bi-dimensional one. Nonetheless, the vessel profile is well outlined so that the thickness and shape of the walls are obvious. Moreover, the drawing must include the scale, which is essential in order to “read” the dimensions of the artefact. (P.M.)

Although the classical methods of archaeological research are crucial for pottery analyses, they cannot always provide clear and scientifically accurate answers to a series of current issues in archaeology, such as those regarding the absolute dating of artefacts/establishing of absolute chronologies, the reconstruction of pottery manufacturing stages, including the estimation of the firing temperature and the selection of the optimum conservation and restoration methods for different types of ceramic artefacts.

In its endeavour to understand human behaviour primarily through the material remains of past societies, archaeology has started to increasingly interact with other sciences, such as physics, chemistry, geology, biology, biochemistry, material sciences, mathematics, statistics and computer sciences, which have been adapted to respond to the specific needs of archaeological research. Consequently, in the last forty years, the applications of the above-mentioned sciences in the archaeological research have contributed to the development of an interdisciplinary cooperation and created a new concept called “archaeometry”.

In general, archaeometry involves: (i) dating of archaeological artefacts; (ii) investigations of ancient technology; (iii) provenance studies of artefacts (pottery, metals etc.); (iv) prospections and geoarchaeological studies; (v) conservation studies of artefacts in situ and in

museums; (vi) applications of mathematical and statistical methods to archaeological materials.

Archaeometric studies are carried out by specialized researchers. However, in order to achieve a better knowledge of the ancient cultural societies and their evolution, the selection of the artefacts to be analysed and the interpretation of the scientific results should be the outcome of a close collaboration between scientists and archaeologists.

Archaeometry of pottery

In the case of ancient pottery, archaeometric research focuses on two main aspects: (1) absolute dating of pottery artefacts, and (2) the analysis of artefacts in order to determine the raw materials and to identify the techniques used to manufacture the artefacts.

Scientific –based dating of pottery

The most commonly used methods for absolute dating of pottery artefacts are thermoluminescence and archaeomagnetism.

Thermoluminescence dating

Thermoluminescence dating was developed in the '60s-'70s by Aitkins et al. in the Oxford laboratory. The crystalline inclusions (quartz, feldspars etc.) incorporated in clay materials that can be dated by this method, are continuously irradiated by natural radionuclides, especially those of the uranium and thorium series, of the radioactive potassium isotope and in a lower proportion by cosmic radiation.

During the heating of clay at a temperature lower than the incandescence one, the minerals from clay release light radiations: the thermoluminescence (TL).

Thermoluminescence (TL) is a property of the crystals and nonconductive materials, which have been naturally or artificially irradiated, to emit light during the process of their heating.

During the pottery manufacturing process, the firing of the clay at a temperature higher than 500°C erases any previous geological TL due to the natural irradiation experienced by the constituent minerals. This means that the luminescence "clock" was set to zero. After the firing, the TL signal starts to grow again with the age. If the artefacts to be dated have been preserved in the same environment, then they have been exposed to constant irradiation even since their production. The level of TL observed in ancient samples is thus dependent on the absorbed radiation dose, and hence can be related to the time elapsed since last heating.

In principle, the age of the pottery, may be calculated using the following equation:

$$\text{Age} = \frac{\text{Archaeological (natural) dose}}{\text{Annual dose}}$$

The annual dose due to the natural and cosmic irradiation during burial can be determined by measuring the concentration of the radioactive elements (uranium, thorium, potassium).

In TL dating, the minerals commonly used are quartz, feldspar, natural calcium fluoride, although the possibility of using zircon, volcanic glass and calcium

carbonate has also been demonstrated.

The maximum approximate range of dating for some of the materials often used for TL dating is: quartz - 50 000 years; feldspar and limestone: 500 000 years.

TL dating can be applied to the materials whose manufacturing requires high temperature heating, typically including pottery, bricks, baked hearths, porcelain, bronze clay-cores, burnt flint and burnt rocks. (S.V.)

Archaeomagnetic dating

Archaeomagnetism is the investigation of archaeological contexts or objects using geophysical methods to reveal the interaction between their magnetic minerals and the Earth's magnetic field.

Archaeomagnetic dating is based on recovering magnetic data from ancient artefacts and contexts and comparing this to a well-established calibration curve in order to provide a calendar date.

Baked material, such as baked clay, bricks, tiles are used to obtain direction and/or intensity of the ancient geomagnetic field during archaeological periods of time. When a material containing magnetic grains (i.e. iron oxides) is heated above 700°C, it loses any previous remanent magnetisation. As it cools down, the magnetic grains acquire an intensity and direction of magnetisation that are identical with those of the Earth's magnetic field at ancient times and are preserved for thousands of years unless the materials were reheated or chemically changed.

As the Earth's magnetic field gradually changes, the direction and intensity within samples taken from the archaeological site can be dated by comparison with known and well dated records at that locality.

In the case of pottery, the direction of the ancient magnetic field cannot be recovered if the artefact was removed after its initial firing. Therefore, only the intensity of the ancient magnetic field can be used for dating, but with a lower precision and greater efforts. (C.Ş.)

Archaeometric analyses

As clay is a complex heterogeneous material consisting of various minerals, in order to ascertain the provenance of the pottery and to reconstruct the technology used for its production, a multi-disciplinary approach should be used, based on the investigation of both the composition and microstructure of ceramic pastes, coatings (slips, painting materials etc.), and of any appropriate debris (raw clay samples, kiln fragments) that may have been preserved. Consequently, several complementary analytical techniques are required for an accurate and complete characterization of the ancient pottery and raw materials.

The most common techniques used to determine the chemical composition and the microstructure of the pottery, including the ceramic paste (matrix), slip (engobe), painted decoration are listed below, while detailed information about the scientific principle of these methods and the conditions for their application in archaeometric research could be found in the references.

Chemical composition	X-ray Fluorescence Spectrometry (XRF) Neutron Activation Analysis (NAA) Atomic Absorption Spectrometry (AAS) Scanning Electron Microscopy coupled with Energy Dispersive Spectrometer (SEM-EDS) Optical Emission Spectrometry (OES) Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES) Inductively Coupled Plasma Mass Spectrometry (ICP-MS)
Microstructure	X-ray Diffraction (XRD) Optical Microscopy (OM) Scanning Electron Microscopy (SEM)

In the particular case of Neolithic pottery, the widely used analytical methods for archaeometric investigation are X-ray fluorescence spectroscopy, X-ray diffraction and optical microscopy which provide complementary scientific data. The main principles of the above mentioned methods, as well as the most important information for archaeological research that could be obtained by using them are presented in the following lines in a very simple and easy-to-understand manner.

X-ray fluorescence spectrometry (XRF) is a method used for the qualitative and quantitative determination of the elemental chemical composition of pottery samples.

The technique involves the excitation of the sample (pottery) by bombarding it with primary high-energy X-rays. The interaction of X-rays with the sample displaces the inner shell electrons, while the outer shell electrons fall into the vacancy left by the displaced electron, thus causing the emission of characteristic "secondary" (or fluorescent) X-rays. Each element present in the sample

emits X-rays with different energies. These X-rays can be detected and displayed as a spectrum of intensity against energy: the elements presented in the samples could be identified from the positions of the peaks (wave length), while the intensity of light emitted is proportional to the elements concentration.

To prepare the samples for XRF analysis, a small quantity (about 0.5-1 g) of pottery sample is powdered and pressed using an inorganic (boric acid) or organic (carboximethyl cellulose) binder in order to obtain a tablet (disc) which could be then analysed.

The analysis of the emitted secondary (fluorescent) X-rays allows the determination of the major (Si, Al, Fe, Ca, Mg, Na, K) and minor (Ti, Mn, P) elements from the pottery sample. The quantitative chemical composition of ceramic paste is defined by the percentage amounts of the major and minor elements present in the samples.

The equipment used to obtain XRF spectra is called X-ray spectrometer. The tablet used for XRF analysis could be recovered and then analysed by X-ray diffraction.

X-ray diffraction (XRD) is a technique that allows the identification and quantification of the crystalline phases present in the clay matrix (paste) of the pottery samples.

Mineral phase – compound having a well defined chemical composition, a homogenous (crystalline or amorphous) structure and well established physical proprieties, and which has been formed as a result of geological processes.

X-rays are a form of electromagnetic radiation with a wavelength in the range of interatomic distances (0.1-10

Å). This match of length scales makes them suitable for the study of crystalline materials.

The identification of the minerals from the sample is based on the measurement of the diffraction angles, which are typical for each crystalline species. Each crystalline material has its unique characteristic X-ray powder pattern which may be used as a "fingerprint" for its identification. Unlike chemical analysis the information gained by XRD relates to specific compounds (phases) and can even distinguish compounds having the same chemical formula but different crystal structures. XRD facilitates the identification of the mineral phases from the clayey matrix and which are 'invisible' at the optical microscope. It also helps to determine the structural transformation of the clay minerals during firing.

The firing of clay produces a series of transformations of the mineralogical composition, for instance some of the minerals (i.e. clay minerals) could be destroyed during heating, while other mineral phases are formed. Knowing the temperatures at which different transformations take place, by determining the mineralogical composition of the pottery, one can estimate the maximum temperature reached during firing.

Thus, the identification of a certain mineral phase can be associated with a certain value of the maximum temperature reached during the firing of pottery artefacts. For instance, the presence of relicts of calcite in the XRD spectra suggests that the maximum temperature during firing did not exceed 650-700°C, since at higher temperatures calcite decomposes. In the same time, the

results of the chemical analysis of the pottery should indicate a high content of CaO, which then supports the previous hypothesis. Crystalline phases of secondary origin due to the pollution during burial could also be identified in the ceramic matrix. The instrument for XRD measurements is called X-ray diffractometer.

Optical microscopy (OM) is a method used to study the minerals from the pottery samples, which are prepared as thin-sections.

Thin-sections of pottery are made by fixing a small fragment of the pottery on a glass slide (with Canada balm or synthetic resins) and then grinding and polishing it until it is only 30 µm thick, thin enough to allow light to pass easily through.

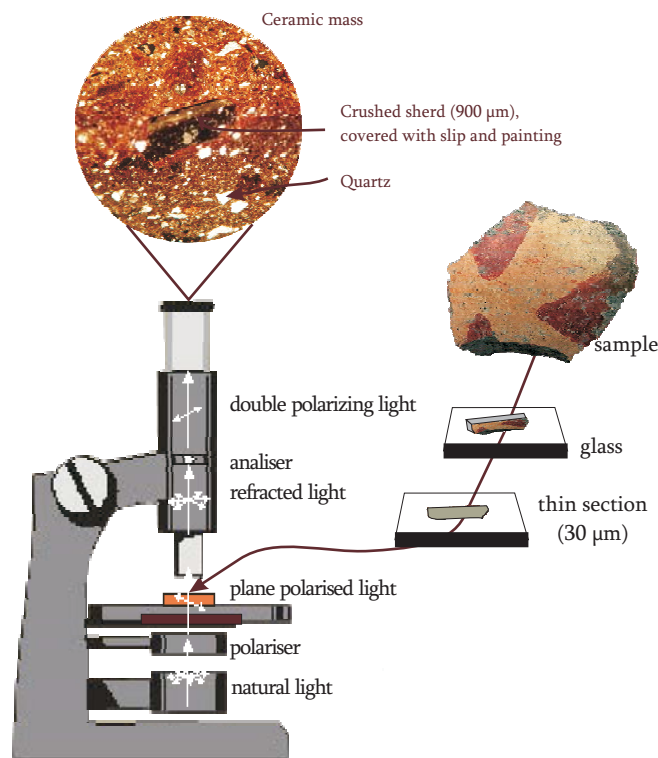


Fig. 30. The principle of optical microscopy

The examination of the thin-sections of pottery under a polarising microscope (magnification up to 100 x) allows the observation of the textural features of the argillaceous matrix (colour, fineness, homogeneity, roundness, etc.) and of the macro-pores (shape, size, preferential orientation, etc.), as well as the identification of the mineralogical composition, abundance, grain packing and size distribution of crystalline aplastic inclusions (temper) present in the ceramic paste (Fig. 30).

Generally, the artefacts having similar microstructural features could be grouped into so-called “petrographic classes (groups)”. The artefacts made from a certain type of raw materials, using similar techniques are usually included in the same “petrographic group”.

The abundance and mineralogical composition of the aplastic inclusions provide information on some of the technological processes used in the artefacts' production: the methods for paste preparation, the nature of the temper used and possibly their origin, the applied surface treatments (smoothing, polishing, the application of slip, painting, etc.) and the firing conditions.

For instance, the presence of a thin superficial layer of mica minerals parallel to the external surface could indicate the smoothing or polishing of the surface. In wheel thrown pots the long axes of inclusions tends to lie parallel to the plane of the wheel head. The nature and the thickness of the slip and painting could also be determined accurately by the study of the thin-sections.

Moreover, the quality (mineral and/or rock fragments), quantity (distribution and amount of the fragments) and

other physical properties of the aplastic inclusions can provide information which, compared to the geological data from the presumed region of origin of the ceramics, can decide about their identification.

The presence of a certain type of aplastic inclusion (i.e. magmatic rocks) could be correlated, in some cases, with a certain provenance area of the raw material used.

Although microscopic observation is an essential method in archaeometric research of ceramics, this singular method cannot provide decisive information about the origin of the artefact.

The provenance of the artefacts could often be determined by measuring the abundance of the chemical elements in a pottery fragment, and comparing the results with those obtained for the raw clay and/or artefacts produced in known pottery workshops.

Chemical analysis of pottery could provide a compositional “fingerprint” for identifying the pottery made of the same raw materials and for distinguishing groups of pottery made of different raw materials (differentiate between imported and locally made pottery).

Therefore, it is obvious that only by the correlation of the chemical, mineralogical and petrographical features of the pottery and taking into account the results of the classical archaeological research is possible to ascertain the provenance of ancient ceramic artefacts and to “reconstruct” all stages and techniques used for their production, starting from the identification of the raw materials (clay, temper etc.) and of the methods used for

shaping the artefacts, the surface-treatments applied and up to the estimation of the firing temperature.

Another condition for the success of archaeometric investigations on ancient pottery is that the group of samples selected for scientific analyses must be representative of the available ceramic artefacts assemblage under study. As far as possible, each group should consist of at least 15-20 pottery samples of a certain type, belonging to a single culture, and coming from a single archaeological site.

A case study presenting the results of the archaeometric investigation on the ceramic paste of a potsherd belonging to “Lumea Nouă” culture discovered at Limba archaeological site (Alba County, Romania) is presented in Fig. 31.

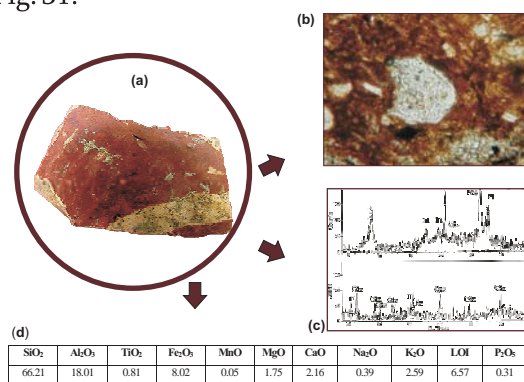


Fig. 31. Results of the archaeometric investigation on the ceramic paste of a painted potsherd belonging to Lumea Nouă culture, discovered at Limba archaeological site (Alba County, Romania). (a) Ceramic fragment decorated with painting, white-yellowish slip, red-dark red wide strips, with polished surface. (b) Thin-section micrograph of the ceramic paste (x40, // nicol) in which a bioclast is visible; (c) XRD of the ceramic paste – the identified mineral phases are quartz (Qtz), illite (Ill), plagioclase (Pl) and K-feldspar (Kfs); (d) chemical composition (wt %) of the pottery determined by XRF.

The archaeometric research on a representative number of Lumea Nouă ceramic fragments discovered at Alba Iulia – Lumea Nouă and Limba archaeological sites was carried out in collaboration with the team led by Dr. Bruno Fabbri from Istituto di Scienza e Tecnologia dei Materiali Ceramici (Faenza, Italy).

Microscopic examination by transmitted polarized light was carried out using a Leitz Laborlux 11 POL optical microscope. The chemical composition of the ceramics bodies (for major and minor elements) and of the raw materials was determined using a Philips PW 1480 spectrometer, while the chemical composition of the slip and decoration materials was determined using a scanning electron microscope (Stereoscan 360, Cambridge Instruments) coupled with an energy dispersive X-ray analyzer (Inca Energy 300). The mineralogical composition was determined using a SIEMENS diffractometer with copper anticathode.

Experimental results indicated the fact that Lumea Nouă artefacts, irrespective of the archaeological site where they were discovered, had a complex and heterogeneous chemical composition. XRF analyses data display SiO₂, Al₂O₃, Fe₂O₃ and K₂O as main oxides, with variable quantities of CaO, MgO, Na₂O and TiO₂. The mineralogical examination of thin-sections allowed the individuation of two different types of paste, the primary distinction being related with the presence or absence of several varieties of bioclasts. In spite of this, most of the artefacts analysed could be retained of local provenance.

The estimated firing temperature was between 850 and 900°C for most of the investigated Lumea Nouă artefacts, but there are also samples that were fired at temperatures

of about 600-700°C.

On the basis of the scientific results obtained by different archaeometric (XRF, XRD, optical microscopy, SEM-EDS) and archaeological investigations of several Lumea Nouă painted sherds discovered at Alba Iulia-Lumea Nouă and Limba archaeological settlements, it was possible to “reconstruct” the possible stages used for the production of the pottery: (i) preparation of the ceramic paste by mixing an illitic clay with temper (feldspatic - quartzitic sand, organic material and rarely crushed sherds) and water; (ii) shaping the clay by hand-pressure; (iii) application of the slip consisting of a fine-grained carbonatic clay with high content of illite; (iv) smoothening and polishing the surface; (v) partial drying; (vi) painting using iron-rich materials and (vii) firing at 600-900°C.

Most of the potsherds are characterized by a white or light yellow slip layer with the average thickness between 100 and 120 µm, while the thickness of the decoration layer is 10-20 µm.

Nicol – perfect clear calcite prism used in the optical microscope to produce plane-polarized light.

Bioclasts – relicts of fossils originating from the raw materials or added as temper. Examples of bioclasts: shells and mollusc valve, ostracode, foraminifera, and animal crushed bones.

In the end it should be emphasised that the interdisciplinary collaboration between the scientists and archaeologists is essential to success only if the entire group of participants is involved at every stage, from the formulation of the archaeological questions, raised by the fieldwork, excavation and selection of the pottery

samples, to the scientific investigation discussion and correlation of the archaeometric and archaeological results, and to their publication. (S.V.)

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List of Abbreviations

ActaMN – Acta Musei Napocensis, Cluj-Napoca.

Acta MP – Acta Musei Porolissensis, Zalău.

AJA – American Journal of Archaeology, New York.

AH – Archaeologia Hungarica, Budapest.

AISC – Anuarul Institutului de Studii Clasice, Cluj.

Angustia - Angustia, Muzeul Carpaților Răsăriteni, Sfântu Gheorghe.

Antaeus - Antaeus, Mitteilungen des Archäologischen Instituts der Ungarischen Akademie der Wissenschaften, Budapest.

AnB (AnB, S.N.) - Analele Banatului (din 1981 Analele Banatului, Serie Nouă, Arheologie-Istorie), Timișoara.

Apulum – Apulum. Acta Musei Apulensis, Alba Iulia.

Arh Vestnik – Arheologicke Vestnink, Ljubljana.

Banatica – Banatica, Reșița.

BAR – British Archaeological Reports, Oxford.

BCȘS - Buletinul Cercurilor Științifice Studentești, Alba Iulia.

BCH – Bulletin de Correspondance Hellénique, École Française d'Athènes, Atena.

BerRGK – Bericht der Römisch-Germanischen Kommission, Frankfurt am Main.

BHAB - Bibliotheca Historica et Archaeologica Banatica,

Timișoara.

BMA - Bibliotheca Musei Apulensis, Alba Iulia.

BMN - Bibliotheca Musei Napocensis, Cluj-Napoca.

BMMK – A Békés Megyei Múzeumok Közleményei, Bekescsaba.

BS - Biblioteca Septemcastrensis, Institutul pentru cercetarea și valorificarea patrimoniului cultural transilvănean în context European, Sibiu.

BT - Bibliotheca Thracologica, București.

Carpica - Muzeul de Istorie Bacău, Bacău.

CA - Cercetări Arheologice, București.

CCA - Cronica Cercetărilor Arheologice din România. Comisia Națională de Arheologie.

CCDJ – Cultură și Civilizație la Dunărea de Jos, Călărași.

Corviniana - Acta Musei Corvinensis, Hunedoara.

Crisia - Crisia. Culegere de materiale și studii. Muzeul Țării Crișurilor, Oradea.

Dacia – Recherches et découvertes archéologiques en Roumanie. București.

Dacia, N.S. - Dacia. Revue d'archéologie et d'histoire ancienne. București.

DissPann - Dissertationes Pannonicae, Budapest.

MFME – A Móra Ferec Múzeum Évkönyve, Szeged.

EJA - European Journal of Archaeology.

GlasnikSarajevo – Glasnik Zemaljskog Muzeja Bosni i Hercegovini, Sarajevo.

IPH - Inventaria Praehistorica Hungarie, Budapest.

JAMÉ - A Jós András Múzeum Évkönyve, Nyíregyháza.
Marisia - Marisia. Studii și materiale, Târgu-Mureș.

MCA - Materiale și Cercetări Arheologice. București.

PA - Patrimonium Apulense, Alba Iulia.

Pontica - Pontica, Muzeul de Istorie Națională și Arheologie Constanța

PZ - Prähistorische Zeitschrift, Berlin-Leipzig.

RevM - Revista Muzeelor. București.

Sargetia - Sargetia. Buletinul Muzeului județului Hunedoara. (Acta Musei Devensis).

SCIV (SCIVA) – Studii și Cercetări de Istorie Veche (din 1974: Studii și Cercetări de Istorie Veche și Arheologie), București.

SCMBI - Studii și Comunicări. Muzeul Brukental. Arheologie-Istorie, Sibiu.

SIVAT – Studii de Istorie Veche și Arheologie Transilvăneană, Hunedoara.

StComCar - Studii și comunicări de etnografie-istorie. Caransebeș.

StComSM - Studii și comunicări. Muzeul Județean Satu Mare.

SZ - Studijné Zvesti. Archeologickeho ústavu Slovenskej académie vied. Nitra.

Tibiscum - Tibiscum. Studii și comunicări de istorie locală și etnografie, Caransebeș.

VAH - Varia Archaeologica Hungarica, Budapest.